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AMERICAN VETERINARY MEDICAL ASSOCIATION

Convention Number

86th Annual Meeting, Detroit, July 11-14, 1949

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Volume CXIV JUNE 1949 *Number 867*

TWO GREAT SAYINGS

Concerning Clinical Veterinary Medicine

I

Owing to his knowledge of the herd involved, of the sanitary state of the environment, and of the owner's habits, the local practitioner is the most reliable livestock sanitarian.—*Proc. Twelfth Internat. Vet. Cong.*

II

By keeping ill health of farm animals down to an irreducible minimum in his community, the local veterinarian underwrites successful farming and higher standards of living.—Editorial, *J. A. V. M. A.*

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Journal of the American Veterinary Medical Association

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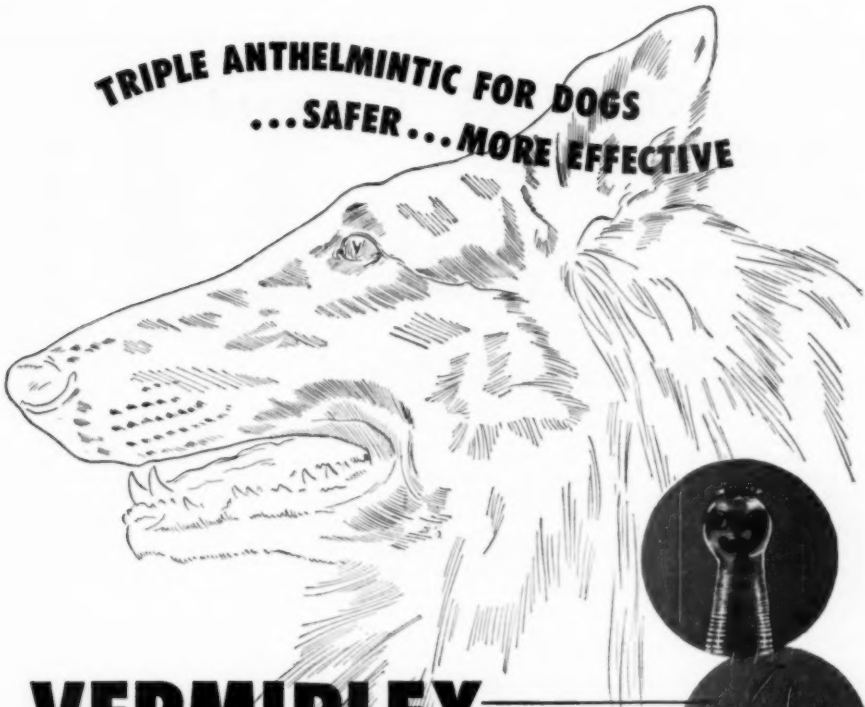

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Above: Tapeworm scolex
Center: Hookworms
Left: Ascarides

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1. Blair, H. E.: Unpublished data.
2. Enzie, F. D.: Proc. Helm. Soc. Wash. *14*:35-44 (Jan) 1947.
3. Craige, A. H. Jr., and Kleckner, A. L.: North Am. Vet. *27*:26-30 (Jan) 1946.

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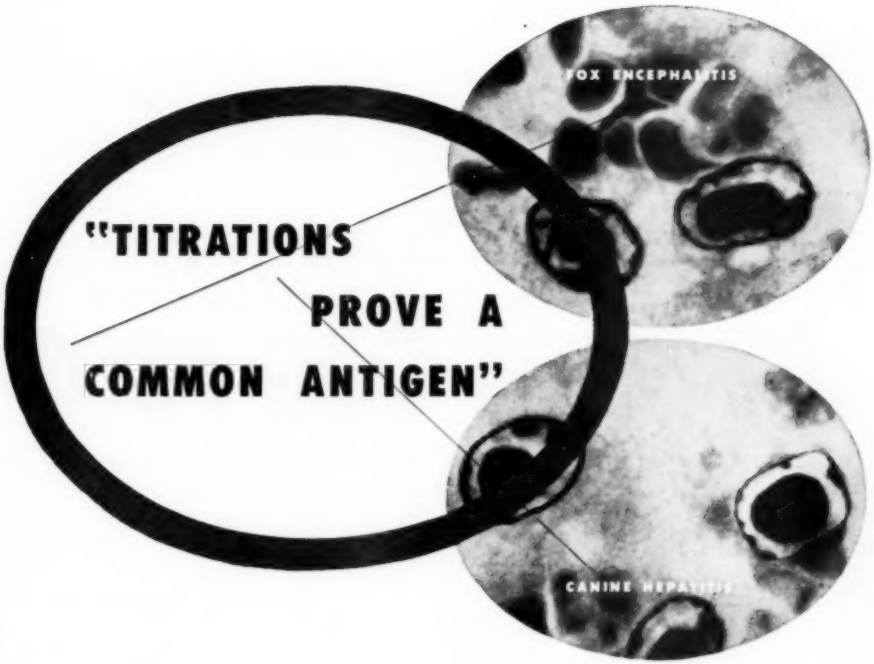

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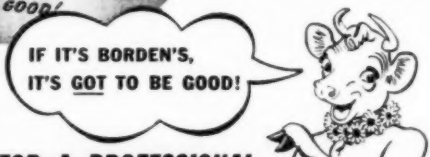

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[1]Chavance, J. Vet. Med. 41: (1946) 199-201

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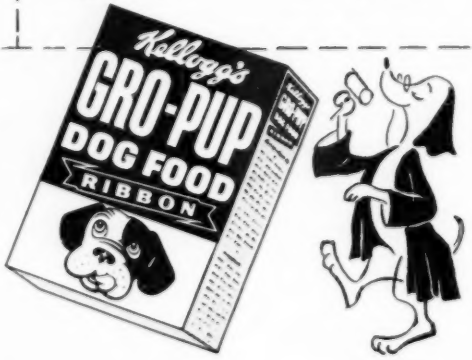

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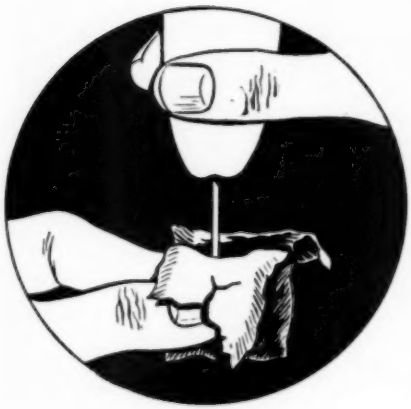

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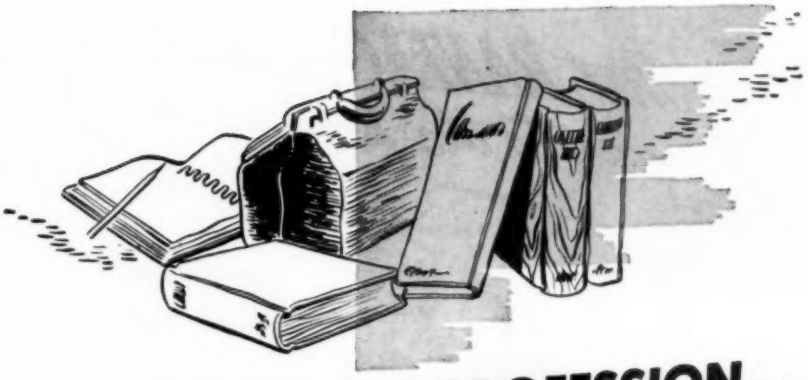

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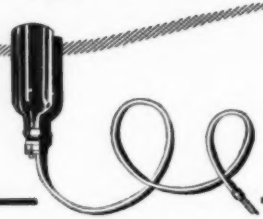

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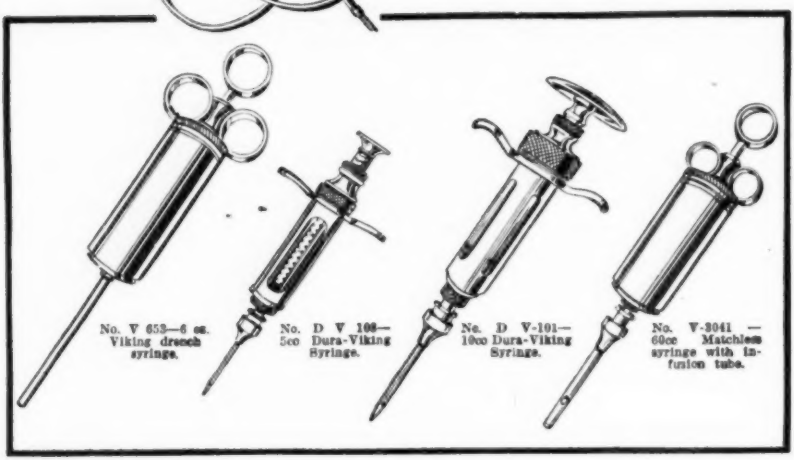
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AVMA ☆ *Report*

Veterinary Medical Activities

★ The Board of Governors met in Chicago Saturday and Sunday, May 7 and 8, to deliberate over 23 items on the agenda. A report of important actions will appear in the news columns of the July JOURNAL.

• • •

★ The Fellowship Committee of the AVMA Research Council reviewed the progress made under the fellowships which it has activated. Some studies have been completed and will be reported soon, some are being continued, and some new ones are being started.

• • •

★ Dr. R. P. Link represented the AVMA at a meeting of the Interdepartmental Committee on Trade Names for Insecticides and addressed the members of the American Pharmaceutical Manufacturers' Association. He stressed the advances in veterinary medicine and the broadening use of newer drugs within the profession. (*See* News Section.)

• • •

★ For the convenience of veterinarians who plan to attend the Detroit Convention, and whose offices may be closed, a special card for notifying clients of their absence is provided as an insert in this issue following p. 446—the first page in the News Section. This is a new service to members, and the AVMA office will be much interested to learn whether members find it useful.

• • •

★ Forewords to Successful Practice is the name of a concise booklet just compiled by the Committee on Public Relations from material furnished by a number of members. Its primary purpose is to assist in getting a practice established. Each graduating senior will be presented with a copy, and AVMA members may obtain them by writing to the Chicago office.

• • •

★ Brucellosis eradication was discussed at a meeting of research workers in porcine brucellosis at Purdue University on April 27 and 28; at a Southern States Conference in Memphis, April 29 and 30; and at the organizing meeting of the National Brucellosis Committee in Chicago, May 10. The AVMA was represented at each meeting by an official representative, and veterinary medicine by numerous veterinarians in official positions and in practice.

• • •

★ President L. M. Hurt and President-Elect C. P. Zepp, Sr., appeared on the program of the American Animal Hospital Association in Chicago, May 4 to 7.

• • •

★ The Council on Education convened in Chicago, May 5 and 6, to discuss the reports of its inspecting committee and other important matters. In addition to the routine inspection of the accredited schools, the committee has also visited many of the schools which have not yet graduated a class.

• • •

★ Executive Board Chairman W. R. Krill, President L. M. Hurt, Executive Secretary J. G. Hardenbergh, and Director of Professional Relations C. D. Van Houweling had lunch with a group of officers of the American Feed Manufacturers' Association on May 6.

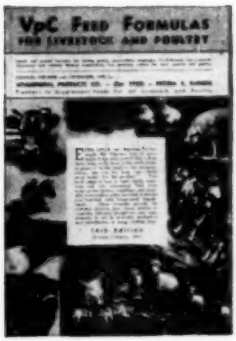
• • •

★ Dr. L. D. Frederick, Chicago, attended the National Egg Transfer Breeding Conference at San Antonio, Texas, on April 14, as AVMA representative. A technique for superovulation and ovum transfer in cattle was demonstrated. A forthcoming issue of the JOURNAL will present a manuscript on this new development.

• • •

★ The AVMA has recently responded to a request from Uganda, South Africa, for information on the American methods of using DDT, BHC, Chlordane, and similar products for control of ticks and other external parasites.

Home-made Concentrates for Growing Pigs



Write for your desk copy of this VpC 36 page, illustrated Feed Book. Tells how to mix home grown grains, concentrates and Vitamineral Supplements to make feeds that go further, do more, cost less.

These provide economical sources of proteins, fat and fiber plus sources of vitamins thru A and D feeding oil, irradiated yeast, brewer's yeast and yeast cultures; calcium; phosphorus; and such trace minerals as iodine, cobalt, iron, copper, zinc, potassium and manganese. They can be suggested to swine raisers with full confidence.

Concentrate for Pigs under 75 lbs.—not on good pasture

This concentrate may be fed in a separate compartment of a self-feeder with grains in other compartments. Pigs will balance their own feed requirements.

600 *lbs. tankage*
600 *lbs. dehyd. alfalfa meal, 17%*
600 *lbs. soybean oil meal*
200 *lbs. Con-o-mineral*
40 *lbs. salt*

2040 *lbs.*

APPROXIMATE ANALYSIS: *Protein*, 35.0%; *fat*, 4.0%; *fiber*, 10.0%.

Concentrate for Pigs under 75 lbs.—on nutritious pasture

This concentrate differs from the one opposite in that it contains no alfalfa meal. Feed in a separate compartment of a self-feeder with grains in other compartments.

500 *lbs. tankage*
1200 *lbs. soybean oil meal*
300 *lbs. Con-o-mineral*
40 *lbs. salt*

2040 *lbs.*

APPROXIMATE ANALYSIS: *Protein*, 40.0%; *fat*, 4.5%; *fiber*, 4.0%.

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Via-D-Mineral Con-o-mineral Viamineral Viaferm

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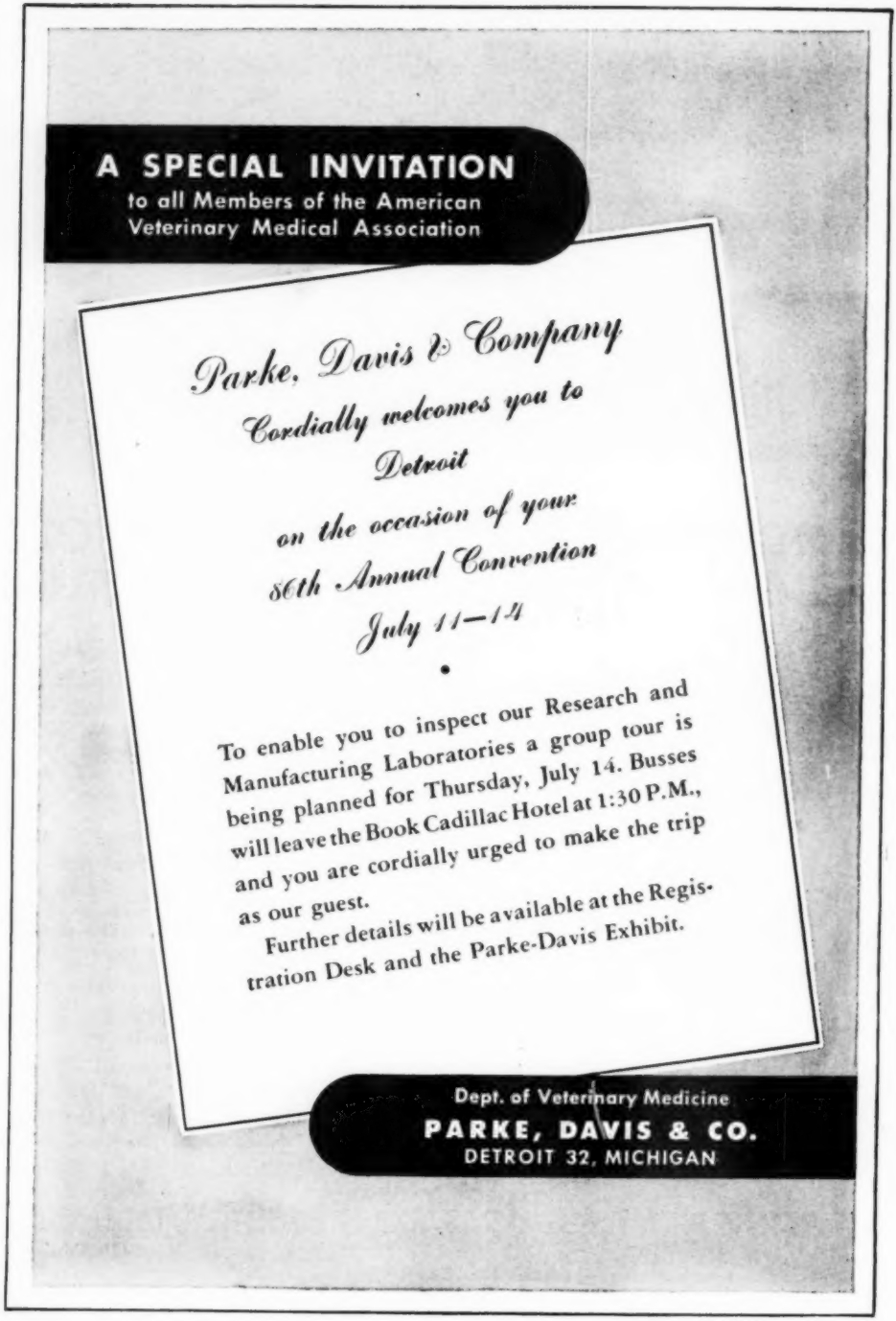
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to all Members of the American
Veterinary Medical Association
Parke, Davis & Company
Cordially welcomes you to
Detroit
on the occasion of your
86th Annual Convention
July 11—14
To enable you to inspect our Research and Manufacturing Laboratories a group tour is being planned for Thursday, July 14. Busses will leave the Book Cadillac Hotel at 1:30 P.M., and you are cordially urged to make the trip as our guest.
Further details will be available at the Registration Desk and the Parke-Davis Exhibit.
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Investigate now the many opportunities for increasing your professional stature while on active duty with the Army Veterinary Corps. Excellent experience assured in food inspection, laboratory research . . . valuable background for public health work . . . many other fine futures. Recent scientific research provides challenging new careers. Security, food and housing allowances, paid vacations, travel, a chance to build toward a generous retirement income—are some of the benefits. Chart your probable assignments through the new Career Guidance Plan. The need is urgent . . . the opportunities unprecedented!

The Army and Air Force provide openings for Reserve Officers and qualified veterinarians without military experience. For details, write today to Surgeon General, Washington 25, D. C.

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IN MANY AREAS, locally grown feeds lack minerals essential to animal nutrition in small (or trace) amounts. And this mineral deficiency . . . *not always apparent* in livestock right away . . . results in low production and gain, fewer and sickly offspring.

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*BLUSALT Reg. U.S. Patent Office—a distinctive blue salt for your protection against substitutes.

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- Operate with minimum strain on animal's stomach muscles while spaying.

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This amazingly low cost Van-Don "Special" Veterinarian's Table offers most of the features usually found only in de luxe models. Made of the finest materials, it fills every need of small animal hospitals and private establishments. Full-size top provides 1342 square inches of *acid-resisting* working surface—*easy to keep clean.*

Heavy, circular 20" *non-tip* cast iron base is drilled for permanent installation. Single pier construction with 5" column finished in triple-coated white enamel. Table top, 37" high, assures maximum convenience and ease of operation. *Table is fully guaranteed as to workmanship and materials.*

AN UNBEATABLE VALUE — *Don't Delay!*

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De Luxe Model (stainless steel top) $139.50

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Please ship by freight, f.o.b. Chicago, one Van-Don "Special" Veterinarian's Table, as indicated, on the terms checked below:

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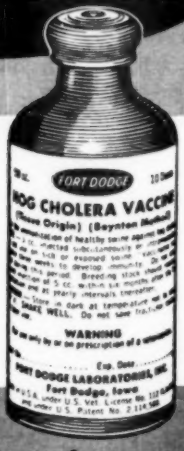

* **Fully protected by patents, insuring its sale to graduate veterinarians exclusively.**

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of the
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VOL. CXIV JUNE, 1949 NO. 867

The Detroit Meeting—A Message from President Hurt

It is my privilege to extend to you a cordial invitation to attend, and to participate in, the Eighty-Sixth Annual Meeting of the AVMA, scheduled to convene at Detroit on July 11 for the usual four-day session. This will be the fourth of our annual meetings held in that outstanding industrial center—1900, 1916, 1929, 1949—the second largest city of Convention Zone 1 (the agricultural empire of the U.S.A.), wherein the annual meetings must be held every other year according to the By-Laws of the Association. Thanks to its industrial enterprises, though unrelated as most of them are to veterinary medicine, Detroit has adequate facilities for the handling of large conventions.

Bordering, as it does, on our Executive Board District No. 1, the Dominion of Canada, our meetings there have been expressions of the good neighbor spirit actively cultivated by the AVMA for more than fifty years. Although Detroit and its environs have been rightly called "the automobile capital of the world," it is a city of highly diversified industries notable among which is the manufacture of pharmaceutical and biological products and the scientific research allied thereto. Pleasant memories linger in the minds of those entertained and instructed at previous meetings by industrial Detroit, though twenty years have elapsed since the last one.

We salute the meeting place of 1949 also for being the birthplace (1883) of the Michigan State Veterinary Medical Association, the first of the state societies which now make up the AVMA federation over which I have the honor to preside, and which aspires to make this meeting "a bigger and better event than we have ever held." We are assured adequate and satisfactory space and comfortable housing for all who attend.

Besides the quality of the discussions on veterinary science, naturally taken for granted, the Great Lakes Region affords a rare opportunity to visit points of splendor

President L. M. Hurt

and of historical interest and to enjoy a real vacation. The Great Lakes Area is famous for its recreational shores and islands too numerous to name.

The Women's Auxiliary has been developed into a splendid organization, with a rapid growth in membership. Its members have outlined plans to assist us in our work and to aid worthy students. I feel justified in saying that they *must* be brought together in increasing numbers from year to year.

My fond hope is that you are no less convinced than I am that the Detroit meeting of 1949 will be an event to celebrate in the years to come.

s/L. M. HURT, *President.*

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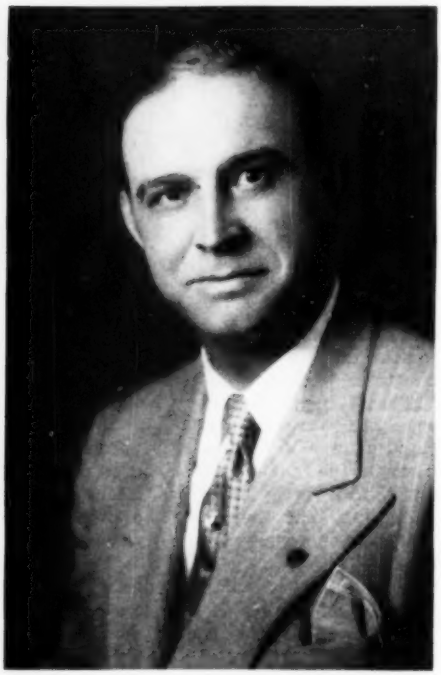

Dr. C. P. Zepp, Sr., President-Elect

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(*Year in which terms expire shown in parentheses*)

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New Mexico	(1)		
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North Carolina	(2)		
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Ohio	(5)	F. J. Kingma	E. W. Roberts
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*National Association of Federal Veterinarians.

The 1949 Session—Official Call

The Eighty-Sixth Annual Meeting of the American Veterinary Medical Association will be held at the Hotels Statler and Book-Cadillac, Detroit, Mich., July 11-14, 1949. Executive sessions of the Board of Governors will be held on Thursday and Friday, July 7 and 8, at the Statler. The Executive Board will hold its first session on Friday afternoon, July 8, at the Statler and an all-day session on Saturday, July 9, at the Book-Cadillac. The House of Representatives will convene for morning and afternoon sessions on Sunday, July 10, at the Statler.

The Opening Session of the Convention is scheduled for 1:30 p.m., Monday, July 7, in the Grand Ballroom of the Statler.

On the following pages is information regarding arrangements for the meeting, the programs of the General Sessions and Sections, the Women's Auxiliary meetings, the exhibits, meetings of related organizations, and other features. The program as given is subject to minor revisions.

Convention Headquarters.—For the first time, joint headquarters are being utilized, made necessary by the present size of AVMA conventions and in order to assure ample facilities for the sessions, section meetings, and other functions.

The technical (commercial) exhibits will be centered at the Statler only and will occupy the Wayne and Bagley Rooms on the ballroom floor adjacent to the elevator lobby, Grand Ballroom, and one of the convention registration desks which will be operated at both headquarters hotels. Some educational exhibits will also be located in this area.

Headquarters of the AVMA, the Committee on Local Arrangements, and the press room will be in parlors on the ballroom floor of the Statler, adjacent to the elevator lobby.

An air view of downtown Detroit, with the Detroit River and Canada in the distance.

Message from Chairman, Committee on Local Arrangements Detroit Meeting

Viewed from all aspects it definitely appears that for the coming AVMA convention "Detroit will be fine for '49". We cannot offer you ocean zephyrs, but we are very sure that lake breezes will be available. And remember, Detroit is a place from which one proceeds *south* to Canada. The Detroit River—a connecting link of the Great Lakes—separates Detroit and Windsor, Ontario.

The "Motor City" is versatile. The interests in art, music, literature, and recreation have been highly developed. The program of entertainment will be outstanding, particularly for the women. Immediately after the meeting, there will be opportunities for education, entertainment, and recreation—even a night baseball game on the best-lighted field in the major leagues.

The section officers have provided full programs which include innovations. Every effort will be made to keep veterinarians attending section meetings advised as to what is going on in other sections at a particular time. Be sure to attend the Tuesday evening session. It will be a revelation in entertaining, homely philosophy.

Detroit is the springboard for vacation land—Canada is just across the river and, incidentally, it offers the shortest routes to the east. From Detroit, for more than 600 miles to the north and west, stretches the country's leading summer vacation land—Michigan.

The local committee has worked hard to prepare for you a worthwhile meeting and we earnestly trust that we shall have an opportunity to serve as your hosts in July.

s/B. J. KILLHAM, *Chairman,*
Committee on Local Arrangements.

The Committee on Local Arrangements, Detroit Convention

First row (left to right)—Mrs. D. L. Caswell, Women's Activities; Mrs. S. R. Elko, Women's Activities; Dr. F. D. Egan, Co-Vice General Chairman; Dr. B. J. Killham, General Chairman; Dr. C. F. Clark, General Secretary; Mrs. R. A. Runnells, Women's Activities; Mrs. F. D. Egan, Women's Activities.

Second row (left to right)—Dr. Don J. Francisco, Meeting Rooms and Equipment; Dr. Robert F. Willson, Entertainment; Dr. H. O. von Rosenberg, Exhibits; Dr. David Ellis, Registration and Information; Dr. O. J. Sorenson, Reception and Hospitality; Dr. S. R. Kelly, Hotels and Housing; Dr. W. A. Higgins, Motion Pictures; Dr. P. V. Howard, Registration and Information; Dr. C. S. Bryan, Public Relations and Publicity; Dr. H. E. Burdick, Garages and Airports. Dr. L. H. LaFond, Co-Vice General Chairman, and Dr. G. W. Reed, Reception and Hospitality, were not present when picture was taken.

Robert F. Willson, Entertainment

Stephen R. Kelly, Hotels and Housing

H. O. von Rosenberg, Exhibits

Don J. Francisco, Meeting Rooms and Equipment

H. E. Burdick, Garages and Airports

W. A. Higgins, Motion Pictures

Chairmen of the Local Committees

Eighty-Sixth Annual Meeting

Detroit

July 11-14, 1949

O. J. Sorenson, Reception and Hospitality

C. S. Bryan, Public Relations and Publicity

David Ellis, Registration and Information

G. W. Reed, Reception and Hospitality

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Eighty-Sixth Annual Meeting

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MRS. C. F. CLARK
MRS. H. H. CLARK
MRS. J. E. COOK
MRS. A. H. DEGROOT
MRS. W. A. DEPPA
MRS. J. R. DEVRIES
MRS. A. W. EMERY
MRS. A. E. ERICKSON
MRS. L. B. FARNSWORTH
MRS. B. C. HEKHUIS
MRS. C. HODDER
MRS. H. HOUGHTEN
MRS. W. A. HOUGHTEN
MRS. P. V. HOWARD
MRS. LEON JONES
MRS. P. J. KELLY
MRS. C. J. KERSHAW
MRS. B. J. KILLHAM
MRS. M. J. KLOOSTER
MRS. H. W. KNIRK
MRS. W. N. KONDE
MRS. L. H. LAFOND
MRS. MORRIS LAMOREAUX
MRS. D. J. MCCLUSKIE
MRS. L. R. NEWLIN
MRS. J. P. NEWMAN
MRS. H. M. OWEN
MRS. GLEN REED
MRS. K. ROSS
MRS. H. H. RUHLAND
MRS. E. K. SALES
MRS. C. C. SCHAFER
MRS. R. D. SIEGLE
MRS. O. L. SMITH
MRS. A. J. SPENCER
MRS. N. B. STERLING
MRS. J. M. TIMMS
MRS. ROY WESTCOTT

Pre-Convention Registration

MRS. S. R. KELLY, *Chairman*
MRS. I. WOOD

Registration

MRS. S. GROSSMAN, *Co-Chairman*
MRS. O. T. SORENSON, *Co-Chairman*
MRS. W. K. APPELHOF
MRS. F. W. BESANCON
MRS. M. CHERIN
MRS. J. M. COLBY
MRS. J. W. EASTMAN
MRS. R. A. HOWARD
MRS. A. M. KROCHMAL
MRS. H. E. VIERGUTZ

Teen-Agers

MRS. D. J. FRANCISCO, *Co-Chairman*
MRS. E. D. WALTERS, *Co-Chairman*
MISS MILDRED RUNNELLS
MISS CHARLOTTE HIGGINS
BILL BURDICK
JACK EMERY

The famous Dearborn Inn, near Greenfield Village, where the women will have luncheon on Tuesday, July 12, after touring the Village.

Message from the Chairman of the Committee on Women's Activities

The women of Michigan have found it a pleasant assignment to make plans for your visit to Detroit.

Some of you will be arriving early. Beginning at noon on Sunday, July 10, local hostesses will greet you at both the Hotel Statler and Hotel Book-Cadillac, and will assist you in any way possible. The activities which concern most of us begin on Monday afternoon. After attending the opening session at the Statler with our husbands, we will go over to the Book-Cadillac for the Auxiliary Tea. Here, you will have an opportunity to meet all of the officers of the Women's Auxiliary and greet convention friends of past years. Monday evening has purposely been left open for reunions with friends.

Mrs. R. A. Runnells, Chairman, Women's Activities

Henry Ford's Greenfield Village at Dearborn will be our destination Tuesday morning. This is one of the historical places every American should see. Luncheon time will find us at the famous Dearborn Inn near the village, after which we will return to the hotel by chartered buses. On Tuesday evening, we will again attend the general session with the men for a program which will be both instructive and entertaining.

After the Women's Breakfast on Wednesday morning comes the annual meeting of the Women's Auxiliary. During the afternoon our Hobby-Tours Committee will be ready with suggestions and help so that you may see and do the things that will be of most interest to you. We cannot indulge our interests too long, however, because we must be ready to accompany our husbands to the alumni dinners which will be scheduled in various places. Following these dinners, we will attend the President's Reception and Dance in the Hotel Statler. We are invited to attend the closing session with the men at the Statler on Thursday morning.

During the entire convention, lounges have been reserved at the Statler (the Salle-Detroit on the second floor) and at the Book-Cadillac (Suite 500 on the fifth floor). Michigan hostesses will be available at all times to give you information about the meeting and Detroit, and to offer suggestions for your pleasure.

On your way to or from Detroit, we hope you will have time to make a circle tour of Michigan and visit some of our automobile and furniture cities, our college campuses, and stop at some of our beautiful lakes and streams.

S/MRS. R. A. RUNNELLS,
Chairman, Women's Activities Committee.

Mrs. D. L. Caswell, Co-Vice Chairman, Women's Activities

Mrs. F. D. Egan, Secertary, Women's Activities

Mrs. S. R. Elko, Co-Vice Chairman, Women's Activities

Message from the President of the Women's Auxiliary

The Women's Auxiliary to the AVMA will be in session during the Eighty-Sixth Annual Meeting of the AVMA in Detroit, July 11-14, 1949, and in their behalf I most cordially invite the wives of all veterinarians and veterinary students to attend the sessions of the Auxiliary.

The official business of the Auxiliary to the AVMA will begin on Sunday morning, July 10, when the Executive Board will be in session.

The attention of all women representing state, provincial, and regional auxiliaries is especially called to the meeting of the House of Representatives, which will convene on Monday, July 11, at 10:30 a.m. in the Michigan Room of the Hotel Statler. All women interested in the development of stronger local groups are cordially invited to attend. Mrs. V. H. Miller, Charleston, W. Va., is sponsor; Mrs. Charles E. Bild is secretary; and Mrs. Floyd White, San Rafael, Calif., is the presiding officer.

Women's Program

Sunday, July 10

10:30 a.m.	Meeting of Executive Board—Book-Cadillac (See Bulletin Board).
Afternoon	Registration.
Evening	Open.

Monday, July 11

8:30 a.m.	Registration.
9:00 a.m.	View Commercial and Educational Exhibits.
10:30 a.m.	Meeting of House of Representatives—Michigan Room (Ballroom Floor), Statler. All interested women are invited.
1:30 p.m.	Attend Opening Session.
4:00 p.m.	Women's Tea—Grand Ballroom, Book-Cadillac.
Evening	Open.

Tuesday, July 12

8:30 a.m.	First Group, Conducted Tour to Greenfield Village, followed by luncheon at Dearborn Inn.
10:00 a.m.	Second Group, Conducted Tour to Greenfield Village, followed by luncheon at Dearborn Inn.
7:30 p.m.	Attend General Session.

Wednesday, July 13

9:30 a.m.	Breakfast and Annual Meeting—Grand Ballroom, Book-Cadillac.
Afternoon	Open.
6:30 p.m.	Alumni Dinners.
9:00 p.m.	President's Reception and Dance—Hotel Statler.

Thursday, July 14

10:00 a.m.	Meeting of Executive Board (new officers).
	This day left open for women to follow their individual preferences.

Mrs. A. E. Bott, President, Women's Auxiliary

On Wednesday morning, July 13, the annual meeting of the Women's Auxiliary will follow a breakfast at 9:30 a.m. in the Grand Ballroom of the Hotel Book-Cadillac, when reports and plans for Auxiliary expansion will be presented. All the women attending the convention are cordially invited.

An attractive and entertaining social program has been arranged by the local Committee on Women's Activities, with Mrs. R. A. Runnells as chairman. She is also the president of the Michigan State Auxiliary.

During the week of the convention, the visiting ladies will enjoy many interesting activities. On Monday afternoon July 11, they will join their husbands at the Opening Session of the AVMA convention, after which they are invited to attend an Auxiliary Tea at 4:00 in the Grand Ballroom at the Hotel Book-Cadillac. On Tuesday, a sight-seeing trip has been arranged, including a visit to Greenfield Village and luncheon at Dearborn Inn. The alumni dinners and the President's Reception and Dance are features that will interest everyone.

Cordially,

s/MRS. A. E. BOTT, *President.*

Women's Auxiliary Official Sessions

Sunday a.m., July 10
Executive Board—Book-Cadillac.

Monday a.m., July 11
House of Representatives—Book-Cadillac.

Wednesday a.m., July 13
Breakfast and Annual Meeting—Book-Cadillac.

Thursday a.m., July 14
Executive Board—To be announced.

Information on Garages, Parking, and Airports in Detroit

Garages and Parking

BOOK-CADILLAC.—Pickup and delivery service; cars stored in Book Tower Garage, at Park Place and State St., 1 block from hotel: Rates—$2.00 for 24 hours, plus 25 cents for both pickup and delivery.

Parking.—Nearest satisfactory is 2 blocks north on Washington Blvd., corner of Clifford. Rates—from 30 cents for first half hour to 75 cents for 6 hours; nightly rate 75 cents until 8:00 a.m.; thereafter, day rates.

NOTE.—Service Parking directly across street *not* recommended.

STATLER.—Pickup and delivery service; cars stored in Devon Garage, Clifford and Elizabeth Sts., 2½ blocks from hotel: Rates—$2.00 for 24 hours, including pickup and delivery.

Parking.—Service Parking at Clifford and Bagley Sts., directly in rear of hotel: Rates—25 cents for 1 hour plus 25 cents for each additional hour; evenings from 5:30 p.m., 75 cents. Hotel rates for overnight storage—$1.50 from 5:30 p.m. to 10 a.m. (This is semi-enclosed with open parking on roof.)

TULLER.—Pickup and delivery service; uses same garage as Statler: which see.

Parking.—Service Parking across street (same rates as above). Union Parking, directly behind hotel at Clifford and Adams Sts.: Rates—from 25 cents for first half hour to 50 cents for 3 hours; night rates—hotel guests, 65 cents from 5:30 p.m. to 8 a.m.

DETROIT LELAND.—Pickup and delivery service; cars stored in Devon Garage, Clifford and Elizabeth Sts.: Rates—$2.25 for 24 hours, including pickup and delivery. (For hotel guests, $1.75 per night if they deliver and call for cars themselves.)

Parking.—Theatre Parking Co., 455 Bagley St., directly across street: Rates—from 25 cents for first half hour to 50 cents for 8 hours; overnight, $1.50 from 5:30 p.m. to 8 a.m.; thereafter 5 cents per hour is added until car is called for. Housey Bros., at Bagley and First Sts., 1 block from hotel: Rates—35 cents for days and evenings; overnight, 80 cents.

FORT SHELBY.—Pickup and delivery service; cars stored at Congress Garage, 244 W. Congress St.: Rates—$1.00 for 4 hours, $1.50 for 24 hours, pickup and delivery included. Also available is Detroit Garage at Cass and W. Lafayette Sts. (No pickup and delivery, no connection with hotel.): Rates—30 cents for first hour, plus 20 cents for each hour up to 13 hours; thereafter up to 24 hours for $1.50.

Parking.—Theatre Parking Co., Second and W. Lafayette Sts., directly adjacent to hotel: Rates—from 25 cents for first hour to 40 cents for 8 hours, or night parking until 8:30 a.m.; thereafter day rates apply. Service Parking, Lafayette and First Sts., across street from hotel: Rates—from 25 cents for first hour to 45 cents for 8 hours, or night parking up to 8 a.m.; thereafter day rates apply.

WOLVERINE.—Pickup and delivery service; uses same garage as Statler: which see. Rates—$1.50 for 24 hours, including pickup and delivery. Hotel also uses Grand Circus Garage on E. Adams St., directly behind Detroit Athletic Club: Rates—same as above.

Parking.—No 24-hour parking lots in this area. One large lot across street with rate of 45 cents for night up to 8:30 a.m.

NOTE.—All parking lots listed above are operated on a 24-hour basis, except as noted. In addition, good parking facilities are afforded Detroit Leland, Fort Shelby, and Wolverine Hotels on unattended lots, located within 1 block of hotels. Rates average about 50 cents.

Airports

DETROIT-WILLOW RUN (Principal Detroit Airport).—This airport is used by the following air lines: Capital; Chicago and Southern; Eastern; Northwest; Trans-World; United.

Location.—Thirty-five miles WSW of downtown Detroit; transportation—Greyhound express bus every 35 minutes, fare $1.50, travel time 48 minutes to terminal near Statler and Book-Cadillac Hotels. Cab service also at from $8.50 for one person to $2.50 each for four persons.

There are three other recommended airports in the Detroit area as listed below.

DETROIT CITY AIRPORT.—Five and a half miles northeast of downtown Detroit. Open only to radio receiver equipped aircraft.

DETROIT-WAYNE MAJOR AIRPORT.—Seventeen miles WSW of downtown Detroit. Should have radio receiver but can land with signal light from tower.

WAYNE-NATIONAL AIRPORT.—Sixteen miles west of downtown Detroit. Used by Dr. Burdick (*see* "Information for Private Pilots").

Information for Private Pilots

Space does not permit publishing complete data about the several airports serving the Detroit area.

Detailed information about location, rules, control tower, elevation, latitude and longitude, landing facilities, lighting, obstructions, services, accommodations, charges, etc., are available and can be obtained either directly from the airports listed, or from Dr. H. E. Burdick, chairman of the Local Committee on Garages and Airports, 23524 Grand River, Detroit 19, Mich. Dr. Burdick uses Wayne-National Airport for his personal plane and says

that any "flying veterinarian" who wishes to land there will be treated right and special tie-down rates arranged. It is suggested that any interested person communicate with Dr. Burdick.

Meetings of Other Organizations

Sunday, July 10

1:30 p.m. American College of Veterinary Pathology — Parlor E (Ballroom Floor), Statler.

Monday, July 11

9:00 a.m. Association of Deans of the American Colleges of Veterinary Medicine—Parlor C (Ballroom Floor), Book-Cadillac.

9:00 a.m. Meeting of Student Chapter Representatives—Parlor F (Ballroom Floor), Statler.

10:00 a.m. Women's Auxiliary House of Representatives — Michigan Room (Ballroom Floor), Statler.

4:00 p.m. Women's Tea—Grand Ballroom, Book-Cadillac.

4:00 p.m. Conference of Chairmen of State Ethics Committees—Parlor F (Ballroom Floor), Statler.

4:30 p.m. Zoo Veterinarians—Parlor D (Ballroom Floor, Statler.

6:30 p.m. Veterinary Exhibitors Association —Ivory Room (Ballroom Floor), Statler.

7:00 p.m. Conference of Editors—Parlor D (Ballroom Floor), Book-Cadillac.

Tuesday, July 12

12:00 Noon Women's Veterinary Association—Dining Room C, Book-Cadillac.

4:00 p.m. Conference of Physiologists and Pharmacologists—Parlor D (Ballroom Floor), Statler.

4:00 p.m. Conference of National Association of Federal Veterinarians—Ivory Room (Ballroom Floor), Statler.

4:00 p.m. Conference of Extension Veterinarians, first session—Private Dining Room C, Book-Cadillac.

Wednesday, July 13

9:30 a.m. Women's Breakfast and Auxiliary Annual Meeting—Grand Ballroom, Book-Cadillac.

4:00 p.m. Reception for Public Health Veterinarians — Italian Gardens (Ballroom Floor), Book-Cadillac.

4:00 p.m. Conference of Extension Veterinarians, second session—Private Dining Room C, Book-Cadillac.

4:00 p.m. Conference of American Boards of Veterinary Examiners—Parlor D, Book-Cadillac.

6:30 p.m. Alumni Dinners — See Bulletin Board.

Thursday, July 14

10:00 a.m. Women's Auxiliary Executive Board (new officers)—See Bulletin Board.

12:30 p.m. American Animal Hospital Association Luncheon and Business Meeting—Ivory Room (Ballroom Floor), Statler.

Editors Will Meet

Editors of state association bulletins and of student publications will meet in Parlor D, Hotel Book-Cadillac, Monday at 7 p.m. This meeting was scheduled upon request, and it is hoped that the result may lead to a more uniform editorial policy and a more general acceptance of publication styles now in use in medical, veterinary medical, and scientific journals everywhere.

Evening Session

Everyone should plan to attend the General Session scheduled for Tuesday evening. Women as well as men, will enjoy the program, because Prof. J. G. Hays, who will serve as moderator, has the outstanding faculty of clinching the points which the panel members drive home in their presentations.

Hotel Reservations

After June 10, requests for reservations should be addressed to: Detroit Convention and Tourist Bureau, 1005 Stroh Bldg., Detroit 26, Mich., or to Dr. Stephen R. Kelly, chairman, Committee on Hotels and Housing, 19233 James Couzens Highway, Detroit 21, Mich., who will make every effort to obtain the accommodations desired.

Officers of the Women's Auxiliary to the AVMA—1948-1949

President—Mrs. A. E. Bott, Belleville, Ill.
First Vice-President—Mrs. V. H. Miller, Charleston, W. Va.
Second Vice-President — Mrs. Dennis Coughlin, Knoxville, Tenn.
Third Vice-President—Mrs. H. W. Ayers, Oklahoma City, Okla.
Fourth Vice-President—Mrs. H. S. MacDonald, Toronto, Ont.
Secretary-Treasurer—Mrs. C. L. Miller, River Forest, Ill.
Executive Board, *Ex-Officio* — The aforenamed officers.
House of Representatives—Mrs. Floyd H. White, San Rafael, Calif., *chairman;* Mrs. C. E. Bild, Miami, Fla., *secretary.*

Convention Registration

There will be no advanced convention registration this year, since the experience of the past two years indicates that benefits and advantages realized were not sufficient to compensate for the great amount of detailed work necessary in the AVMA office for several weeks prior to the convention. However, plans have been made to facilitate and speed up the registration process at Detroit, including the operation of registration desks at both the Book-Cadillac and Statler hotels.

Early Registration.—Registration for early arrivals will open Sunday noon, July 10. Full registration facilities will open at 8:30 a.m., Monday, July 11, and continue daily from 8:30 a.m. to 5:00 p.m.

Who May Register.—AVMA members and other graduates of accredited veterinary colleges; graduates of other veterinary colleges declared eligible for membership; their wives and children; exhibitor representatives, their wives and children; invited guests, and other guests who are sponsored by members.

Members of Student Chapters at accredited veterinary colleges may register *without charge* by presenting chapter membership card for identification; members of veterinary clubs at the newly established veterinary colleges may also register without charge when sponsored by a faculty AVMA member.

Registration Fee.—AVMA members and their wives, $5 each.

Nonmember veterinarians, $10; their wives, $5.

Children who attend social functions and take the trips provided for entertainment must also be registered and pay the $5 fee.

Honorary and Honor Roll members, no charge.

Invited guests and guest speakers, no charge.

All persons attending the sessions, section meetings, exhibits, and other events must be identified by an appropriate badge to gain admission. Uniformed ushers will attend the doors to meeting and exhibit rooms to see that this requirement is observed.

Noonday Luncheon Club Meetings

A schedule of noonday, luncheon club meetings in Detroit has been obtained and will be printed in the Official Program for the benefit of members who desire to visit their respective civic and service clubs and maintain attendance records.

Executive and Legislative Sessions

Committee on Budget.—Thursday, July 7, 9:30 a.m.

Board of Governors.—First session, Thursday, July 7, 1:30 p.m. Second session, Friday, July 8, 9:00 a.m.

Executive Board.—First session, Friday, July 8, 1:30 p.m. Second Session, Saturday, July 9, 9:00 a.m. Third Session, Saturday, July 9, 2:00 p.m.

House of Representatives.—First session, Sunday, July 10, 9:30 a.m. Second session, Sunday, July 10, 1:30 p.m. If a third session is required, it will be scheduled by the House and presiding officers.

Election and Installation of Officers.—Nominations for the election of officers of the association will take place at the end of the Opening Session on Monday afternoon, July 11. If a ballot election is required on account of there being more than one nomination for the respective offices, polls will be set up in the AVMA executive secretary's office in the convention headquarters on Tuesday, July 12. The officers to be elected at Detroit are: president-elect, five vice-presidents, and treasurer. President-Elect C. P. Zepp, Sr., of New York City, will be installed as President at the General Session on Thursday, July 14, along with other officers elected at the annual meeting.

Attention—Women Guests at Detroit

Anticipating a record registration of women guests, the Committee on Women's Activities wants to insure accommodations for all women attending the Convention for the trip to Greenfield Village, with luncheon at famous Dearborn Inn, on Tuesday, July 12. This will be one of the outstanding entertainment features for women at Detroit. Hence, arrangements have been made to handle the trip in two sections, the first leaving at 8:30 Tuesday morning, the second at 10 a.m.

Both groups will follow the same program, including the sightseeing at Greenfield Village and luncheon at the Inn. In order to form groups of equal size, it is expected that the women will be issued, alternately as they register, tickets for either Group 1 or Group 2. The Coöperation of the ladies in accepting this arrangement will help the local committee materially.

As of press time, more than 500 women were accounted for in the advance hotel reservations at Detroit. This indicates a total attendance of more than 750 women.

Special Note re Meeting of House of Representatives, Women's Auxiliary

In order to hold the annual meeting of the Women's Auxiliary House of Representatives without conflict with other events on the women's program at Detroit, it has been necessary to schedule their meeting on Monday morning, July 11, at the Hotel Book-Cadillac.

Daily Program Schedule

The following time table, including only the principal events, is, of necessity, somewhat tentative and subject to minor revisions.

Thursday, July 7

9:30 a.m. Committee on Budget.
1:30 p.m. Board of Governors (first session).

Friday, July 8

9:00 a.m. Board of Governors (second session).
1:30 p.m. Executive Board (first session).

Saturday, July 9

9:00 a.m. Executive Board (second session).
12:30 p.m. Executive Board Luncheon.
2:00 p.m. Executive Board (third session).
3:00 p.m. Committee on Local Arrangements.

Sunday, July 10

9:30 a.m. House of Representatives (first session).
10:00 a.m. Setting-up of Commercial and Educational Exhibits.
10:30 a.m. Women's Auxiliary Executive Board.
12:00 Noon Registration.
1:30 p.m. House of Representatives (second session).

Monday, July 11

8:30 a.m. Registration.
9:00 a.m. Official opening of Exhibits.
9:00 a.m. Meeting of Association of Deans of American Colleges of Veterinary Medicine.
9:00 a.m. Meeting of Student Chapter Representatives.
10:30 a.m. Women's Auxiliary House of Representatives.
1:00 p.m. Opening Session.
4:00 p.m. Council on Education.
4:00 p.m. Women's Tea.
4:00 p.m. Conference of Chairmen of State Ethics Committees.
4:00 p.m. Teen Agers' Mixer.
4:30 p.m. Meeting of Zoo Veterinarians.
6:30 p.m. Veterinary Exhibitors Association.
7:00 p.m. House of Representatives (third session, if necessary).
7:00 p.m. Conference of Editors.

Tuesday, July 12

8:30 a.m. Registration continued.
8:30 a.m. First Group, Conducted Tour for women to Greenfield Village.
9:00 a.m. Exhibits open.
9:00 a.m. to 11:30 a.m. Section Meetings: Small Animals; Poultry; Surgery and Obstetrics (first sessions).
10:00 a.m. Second Group, Conducted Tour for women to Greenfield Village.
12:00 Noon Women's Veterinary Association.
1:00 p.m. Section Meetings: Small Animals; Poultry; Surgery and Obstetrics (second sessions).
4:00 p.m. Conference of Physiologists and Pharmacologists.
4:00 p.m. National Association of Federal Veterinarians.
4:00 p.m. Extension Veterinarians (first session).
7:30 p.m. General Session.

Wednesday, July 13

8:30 a.m. Registration continued.
9:00 a.m. Exhibits open.
9:00 a.m. to 11:30 a.m. Section Meetings: General Practice; Public Health; Research (first sessions).
9:30 a.m. Women's Breakfast and Auxiliary Annual Meeting.
1:00 p.m. Section Meetings: General Practice; Public Health; Research (second sessions).
4:00 p.m. Public Health Veterinarians.
4:00 p.m. Extension Veterinarians (second session).
4:00 p.m. Conference of American Boards of Veterinary Examiners.
6:30 p.m. Alumni Dinners.
9:00 p.m. President's Reception and Dance.

Thursday, July 14

9:00 a.m. Exhibits open.
9:00 a.m. to 1:00 p.m. General Session, followed by Installation of Officers.
10:00 a.m. Women's Auxiliary Executive Board (new officers). Adjournment.
12:30 p.m. American Animal Hospital Association.

Opening Session

Hotel Statler—Grand Ballroom

Monday, July 11, 1:00 p.m.

Music

1:30 p.m.

Call to Order.—President L. M. Hurt.

Invocation.—Dr. Frederick Olert, Pastor, First Presbyterian Church, Detroit.

The National Anthem.

Address of Welcome.—The Honorable Eugene I. Van Antwerp, Mayor of Detroit.

Response.—Brig. General J. A. McCallam, Director, Veterinary Division, Office of The Surgeon General, Washington, D. C., and First Vice-President of the AVMA.

Greetings from Women's Auxiliary.—Mrs. A. E. Bott, President, Belleville, Ill.

Address.—Dr. L. M. Hurt, President.

Announcements.—Dr. B. J. Killham, General Chairman, Committee on Local Arrangements.

Presentation of Awards.

By Dr. S. T. Michael, Chairman, Special Committee on Humane Act Award:
1949 Humane Act Award.

By Dr. L. M. Hurt, Chairman *ex-officio*, Committee on Awards:
Twelfth International Veterinary Congress Prize.
Borden Award for 1949.

By Dr. W. R. Krill, Chairman, Executive Board:
Gold Key to Incoming President.
Service Scroll to Retiring President.

4:00 p.m.

Nomination of Officers.

4:00 p.m.

Women's Tea.—Grand Ballroom, Hotel Book-Cadillac.

General Sessions

Thursday, July 14, 9:00 a.m.

Hotel Statler—Grand Ballroom

A Quarter Century of Poultry Pathology in North America.
H. J. Stafseth, East Lansing, Mich.

Review of the Animal Disease Situation in the United States.
B. T. Simms, Washington, D. C.

The Hidden Cost.
W. T. Oglesby, Baton Rouge, La.

A Résumé of Advancements in Veterinary Therapy.
A. H. Quin, Kansas City, Mo.

The Rôle of Public Education in Rabies Control.
Alexander Zeissig, Ithaca, N. Y.

U.S. Army Veterinary Aid to European Governments During and Following World War II.
Lt. Col. F. A. Todd, Washington, D. C.

Future Health Needs of the Nation.
Deputy Surgeon General W. Palmer Dearing, M.D., Chevy Chase, Md.

Tuesday, July 12, 7:30 p.m.

Hotel Statler—Grand Ballroom

Symposium—As Others See Us:
Moderator—J. G. Hays, East Lansing, Mich.

County Agricultural Agent.
Victor Beal, B.S., Stanton, Mich.

Farmer.
Sarah Van Hoosen Jones, Ph.D., Rochester, Mich.

Livestock Editor.
Samuel R. Guard, B.S., Louisville, Ky.

Nutritionist.
C. F. Huffman, Ph.D., East Lansing, Mich.

Extension Animal Husbandryman.
C. S. Rhode, B.S., Urbana, Ill.

Dog Fancier and Kennel Club Official.
C. G. Teeter, Royal Oak, Mich.

Three avenues in Detroit converge into Grand Circus Park in the downtown area. The Hotel Tuller is shown at far right foreground, with the Statler across the street from it.

Section Programs

Section on Small Animals

S. R. Elko, Highland Park, Mich., Chairman

H. B. Roberts, Cleveland, Ohio, Secretary

Tuesday, July 12, 9:00 a.m.

Hotel Statler—Grand Ballroom

Motion Picture—Removal of the Cataract from the Dog's Eye.
G. W. Shetter, M.D., and J. B. McQuown, Tucson, Ariz.

Opening Remarks by the Chairman.

Report of Secretary.

Views of Small Animal Hospitals (Illustrated).
H. C. Stephenson, Ithaca, N. Y.

Veterinary Service to Medical Research.
R. D. Larcey, Cleveland, Ohio.

Panel Discussion on Fracture Fixation:

The Place of the X-ray in Fracture Treatment.
G. B. Schnelle, Boston, Mass.

Kirschner-Ehmer Splint Applications.
L. R. Phillips, Denver, Colo.

The Stader Splint.
Otto Stader, Ardmore, Pa.

The Use of Intramedullary Pins in Small Animal Fractures.
W. O. Brinker, East Lansing, Mich.

11:30 a.m.

Adjourn for luncheon period.

Tuesday, July 12, 1:00 p.m.

Hotel Statler—Grand Ballroom

Progress in the Understanding of Canine Distemper and Associated Ailments.
W. H. Riser, Skokie, Ill.

Nominations for Section Officers.

Experimental Production of Urinary Calculi.
Charles Higgins, M.D., Cleveland, Ohio.

The Application of Antihistamine Drugs in Small Animal Practice.
George Rieveschl, Jr., Ph.D., Detroit, Mich.

Some Aspects of Canine Ophthalmology.
W. G. Magrane, Mishawaka, Ind.

The Application of Laboratory Results.
W. N. Konde, Birmingham, Mich.

Section Programs

Section on Surgery and Obste[illegible]s

C. Harvey Smith, Crown Point, Ind., Chairman

E. A. Woelffer, Oconomowoc, Wis., Secretary

Tuesday, July 12, 8:30 a.m.

Hotel Book-Cadillac—Crystal Ballroom

Motion Picture—Man-Made Miracles.
G. D. Britts, Waukesha, Wis.

Opening Remarks by the Chairman.

Report of Secretary.

Roentgen Therapy in Domestic Animal Diseases.
M. A. Emmerson, Ames, Iowa.

An Approach to the Mastitis Problem.
M. G. Fincher, Ithaca, N. Y.

Practical Diagnosis and Surgical Treatment of Traumatic Gastritis.
E. A. Churchill, Philadelphia, Pa.

Examination and Care of the Genital Tract of the Brood Mare.
Col. F. C. Sager, Paris, Ky.

Postparturient Problems in Dairy Cattle.
J. T. Schwab, Madison, Wis.

11:00 a.m.

Adjourn for luncheon period.

Tuesday, July 12, 1:00 p.m.

Hotel Book-Cadillac—Crystal Ballroom

A Comparison of the Various Surgical Procedures in Reducing Umbilical Hernias in Swine.
J. F. Bullard, Lafayette, Ind.

Nominations for Section Officers.

Handling Bovine Sterility in Practice.
C. E. Bassler, Ainsworth, Iowa.

Dystocia in the Sow.
L. T. Railsback, Ellsworth, Minn.

Hormones and Their Relation to Lowered Fertility in Cattle.
W. G. Venzke, Columbus, Ohio.

A Comparison of Local Anesthetic Drugs and Combinations on the Duration of Epidural Anesthesia in the Bovine Animal.
S. J. Roberts, Ithaca, N. Y.

Clinical Aspects of Vibrio Foetus Infections in Cattle.
G. R. Moore, East Lansing, Mich.

The Recto-vaginal Fistula Operation in the Mare.
J. D. Gadd, Towson, Md.

Section Programs

Section on Poultry

W. R. Hinshaw, Berkeley, Calif., Chairman

C. H. Cunningham, East Lansing, Mich., Secretary

Tuesday, July 12, 9:00 a.m.

Hotel Book-Cadillac—Italian Gardens

Motion Picture—Botulism.
E. R. Quortrup, San Diego, Calif.

Opening Remarks by the Chairman.

Report of Secretary.

Coccidiosis in Poultry—A Review.
P. A. Hawkins, East Lansing, Mich.

Chemotherapy of Experimental Histomoniasis (Infectious Enterohepatitis) in Turkeys.
J. H. Sautter and B. S. Pomeroy, St. Paul, Minn.

Nutritional Diseases of Poultry.
Edwin Jungherr, Storrs, Conn.

Progress in Pullorum Disease Control in Poultry, with Special Emphasis on the Last Two Decades.
Henry Van Roekel, Amherst, Mass.

11:30 a.m.

Adjourn for luncheon period.

Tuesday, July 12, 1:00 p.m.

Hotel Book-Cadillac—Italian Gardens

Motion Picture—Poultry Diseases.
C. C. Ellis, G. T. Klein, and R. H. Barrett, Amherst, Mass.

Nominations for Section Officers.

Developments in the Study of the Avian Leucosis Complex.
G. E. Cottral, East Lansing, Mich.

Progress in Infectious Bronchitis Research.
J. P. Delaplane, Kingston, R. I.

Newcastle Disease.
C. A. Brandly, Madison, Wis.

Twenty Years of Progress in Immunization Against Virus Diseases of Birds.
F. R. Beaudette, New Brunswick, N. J.

Twenty-five Years in Poultry Practice.
F. C. Tucker, Claypool, Ind.

A Survey of the Regulatory Control of Poultry Diseases in the United States.
A. L. Brueckner, College Park, Md.

Section Programs

Section on General Practice

A. E. Erickson, Charlotte, Mich., Chairman

A. G. Madden, Madeira, Ohio, Secretary

Wednesday, July 13, 9:00 a.m.

Hotel Book-Cadillac—Crystal Ballroom

Motion Picture—All in a Day's Work.
A. G. Madden, Madeira, Ohio.

Opening Remarks by the Chairman.

Report of Secretary.

The Handling of Feeder Cattle Problems.
G. W. Lies, Fort Recovery, Ohio.

X Disease (Hyperkeratosis) in Cattle.
Rue Jensen, Fort Collins, Colo.

Acute Swine Erysipelas in Northwestern Iowa.
W. A. Aitken, Merrill, Iowa.

Studies of Transmissible Gastroenteritis in Baby Pigs.
L. M. Hutchings, Lafayette, Ind.

11:30 a.m.

Adjourn for luncheon period.

Wednesday, July 13, 1:00 p.m.

Hotel Book-Cadillac—Crystal Ballroom

What the Florida State Live Stock Sanitary Board Is Doing About Mastitis in Dairy Cattle.
A. A. McMurray, Tallahassee, Fla.

Nominations for Section Officers.

Mobile Phone.
D. R. Stephenson, Rockford, Ill.

Two-Way Radio in Veterinary Practice.
R. E. Rasmussen, Bloomfield, Iowa.

Flying Veterinary Service (Illustrated).
E. T. Anderson, Dixon, Ill.

Some Phases of Dairy Cattle Practice.
H. A. Gray, Bowling Green, Ky.

Bovine Dystocia.
Betty J. Wright, Perry, Mich.

The Cattle Mange Problem in New York State: Incidence, Distribution, Pathogenicity, Differential Diagnoses, and the Practical System of Control.
D. W. Baker, Ithaca, N. Y.

Further Studies Pertaining to the Immunizing Value of Brucella M Vaccine.
I. F. Huddleson, East Lansing, Mich.

Section Programs

Section on Research

O. W. Schalm, Berkeley, Calif., Chairman

C. C. Morrill, Urbana, Ill., Secretary

Wednesday, July 13, 9:00 a.m.

Hotel Statler—Michigan Room

Motion Picture—X Disease or Hyperkeratosis in Cattle, Symptoms and Lesions.
C. C. Morrill, Urbana, Ill.

Opening Remarks by the Chairman.

Report of Secretary.

Studies on the Synthetocauline Lungworms of Sheep.
C. R. Mapes, Ithaca, N. Y.

Treating Field and Laboratory Cases of Anaplasmosis with Antimalarial drugs.
Herman Farley, Stillwater, Okla.

Combined Effects of a Program of Management, and Penicillin Therapy, on the Occurrence of Staphylococcal Mammary Infections.
O. W. Schalm and R. W. Ormsbee, Berkeley, Calif.

The Persistence of Brucella Abortus Infection in Cattle.
C. A. Manthei and R. W. Carter, Beltsville, Md.

11:30 a.m.

Adjourn for luncheon period.

Wednesday, July 13, 1:00 p.m.

Hotel Statler—Michigan Room

Pathology and Bacteriology of Infectious Rhinitis in Swine.
F. W. Schofield and T. L. Jones, Guelph, Ont.

Nominations for Section Officers.

Studies of Transmissible Gastroenteritis in Baby Pigs.
W. W. Bay, L. M. Hutchings, L. P. Doyle and Doris E. Bunnell, M. S., Lafayette, Ind.

Studies of the Virus of Equine Infectious Anemia.
R. L. Reagan, Mary G. Lillie, M. S., Jean W. Hickman, B. S., and A. L. Brueckner, College Park, Md.

Observations on Infectious Canine Hepatitis.
L. Smith, Guelph, Ont.

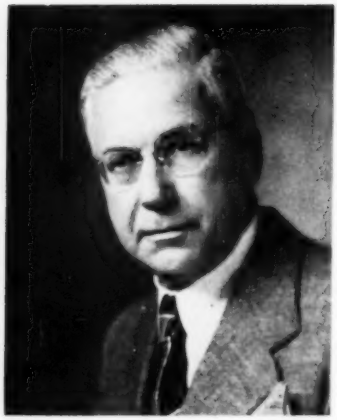
Studies on Canine Leptospirosis. A. Evaluation of Laboratory Diagnostic Procedures. B. Serological Determination of the Incidence of Latent Infection in the Lansing Area.
J. P. Newman, East Lansing, Mich.

A Comparison of Newcastle Disease Antibody Titers in Blood and Egg Yolk as Measured by the Hemagglutination Inhibition Test.
S. C. Schmittle, Urbana, Ill.

A Whole Blood Rapid Agglutination Test for Avian Tuberculosis—Preliminary Report.
A. G. Karlson, W. H. Feldman, Rochester, Minn., M. R. Zinober, St. Paul, Minn.

Section Programs

Section on Public Health



L. W. Rowles, Topeka, Kan., Chairman

Alexander Zeissig, Ithaca, N. Y., Secretary

Wednesday, July 13, 9:00 a.m.

Hotel Book-Cadillac—Italian Gardens

Motion Picture—Foot-and-Mouth Disease.
(U. S. Public Health Service).

Opening Remarks by the Chairman.

Report of Secretary.

Colorado's Meat Inspection Program.
M. D. Baum, Denver, Colo.

Encephalitis as a Public Health Problem.
E. R. Price, Kansas City, Mo.

Q Fever as a Veterinary Medical Problem.
R. J. Huebner, M.D., Bethesda, Md.

Problems of the Milk Sanitation Program.
J. A. Webb, Philadelphia, Pa.

11:30 a.m.

Adjourn for luncheon period.

Wednesday, July 13, 1:00 p.m.

Hotel Book-Cadillac—Italian Gardens

Rabies Strip Film.
(U. S. Public Health Service).

Nominations for Section Officers.

Salmonella Disease in Michigan—1948.
Fred Leeder, M.D., and R. W. Menges, East Lansing, Mich.

Psittacosis Infection in Pigeons.
Dorland J. Davis, M.D., Bethesda, Md.

The Brucella Abortus Ring Test.
M. H. Roepke, Ph.D., St. Paul, Minn.

Symposium on Communicable Disease Problems of Veterinary Public Health:
Moderator—J. H. Steele, Atlanta, Ga.

Veterinary Public Health Problems in the Midwest.
L. R. Davenport, Springfield, Ill.

Communicable Disease Control.
A. E. Heustis, M.D., Lansing, Mich.

How Can the Veterinarian Improve Meat, Milk and Poultry Inspection in His Community?
R. J. Helvig, Washington, D. C.

What Are the Veterinary Public Health Problems of a Large City?
Robert Willson, Detroit, Mich.

Educational Exhibits

MAJOR T. C. JONES, V.C.
REGISTRY OF VETERINARY PATHOLOGY

This exhibit will depict the diagnostic and consultative services of the Registry of Veterinary Pathology, which is sponsored by the AVMA and located at the Army Institute of Pathology, Washington, D. C. Color photographs of pathologic conditions in various species will be shown. One section will be devoted to lesions from canine cases, including distemper, infectious hepatitis, rabies, and "hard pad" disease.

M. A. EMMERSON
DIVISION OF VETERINARY MEDICINE, IOWA STATE COLLEGE

This display will comprise a series of 24 illuminated radiographs that depict diagnostic techniques, pathologic processes, and embryologic development.

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A Series of Displays Developed by the AVMA in the Interests of Professional and Public Relations

BRUCELLOSIS

This exhibit, utilizing motion and illuminated arrows, depicts the transmission of Brucella infections among various animal species and to man, methods of control and diagnosis, and incidence of human cases by states. Drs. J. S. Bengston, C. R. Donham, and G. W. Jensen planned the display, in coöperation with the AVMA office, for initial showing at the American Medical Association convention in Atlantic City, June 6-10, 1949. It is the third and newest of a series of professional relations exhibits that emphasize the veterinarian's contributions to human health.

EXHIBIT SERVICE TO ASSOCIATIONS AND AVMA MEMBERS

A new series of eye-catching panels (each 28 in. x 44 in.) that portray the work of the profession will be on view at the meeting. These panels, easy to ship and easy to set up, were prepared in response to an increasing number of requests from individual members and constituent associations for educational material suitable for showing at public gatherings, such as county and state fairs and vocational exhibitions.

ETHICS

Proper listing for phone directories and approved types of letterheads and professional cards are included. This exhibit, prepared in coöperation with the AVMA Special Committee on Ethics, was shown for the first time at the San Francisco convention last summer and subsequently at many constituent association meetings.

RABIES

Species susceptible to rabies, incidence in man and animals, methods of diagnosis, and control measures are illustrated in this exhibit, which has been on view during the past year at several medical and public health conventions, as well as at the 1948 AAHA meeting in Atlanta and in the Cleveland Health Museum. Drs. C. N. Bramer, J. S. Bengston, and W. A. Young developed the display in coöperation with the AVMA office.

PUBLICATIONS

Samples of the several publications of the AVMA will be displayed so that members may realize the scope and diversity of the publications program. The JOURNAL, the *American Journal of Veterinary Research*, the *Directory*, and several booklets and leaflets will be shown.

PUBLIC RELATIONS

This exhibit will be a panoramic assembly of the many methods used by the AVMA to draw public attention to the veterinarian's work. It will include typical news releases to national press bureaus and the farm press, with clippings of printed items showing how the papers used these releases; samples of weekly radio dialogue scripts prepared for use by constituent associations; radio news items issued regularly to 400 farm radio editors in the United States and Canada; copies of the monthly clip sheet, *AVMA Press Service*, circulated to more than 5,000 rural weekly papers, and public relations kits designed for the guidance of constituent association publicity committees.

The Commercial Exhibits at Detroit

Thirty-eight companies participating in the commercial exhibits at the Detroit Convention offer a variety of pharmaceutical and biological products, antibiotics, instruments, diagnostic apparatus, x-ray equipment, animal foods, fracture splints, hospital and kennel equipment, and other professional requirements, which make these exhibits of exceptional interest to veterinarians.

The exhibits will open at 9:00 a.m., Monday, July 11, in the Wayne and Bagley Rooms on the ballroom floor of the Hotel Statler.

Since there is no program on Monday morning, veterinarians and their wives are urged to take this opportunity for a trip through the exhibit halls as soon as they have registered. The exhibits will be open from 9:00 a.m. to 5:30 p.m. daily and company representatives will be on hand to discuss and demonstrate their products.

The Association and the Committee on Local Arrangements express their appreciation of the fine coöperation of the exhibiting firms in supporting this important and interesting feature of the convention and urge veterinarians to visit the displays frequently. There will be no exhibits at the Book-Cadillac.

Abbott Laboratories
Booth No. 17

Such popular Abbott Products as Nembutal, Pentothal Sodium, Caparside, Tincture Metaphen, Prepared Intravenous Solutions, Sulfathiazole Cream, Penicillin Specialties, Sulvetil, and Abbott Vitamin Products will be on display. Abbott Laboratories extends a cordial invitation to all veterinarians to make the Abbott booth headquarters during the week of the convention.

Allied Laboratories, Inc.
Booths No. 21 and 22

Divisions: Pitman-Moore Company, Pitman-Moore Company of Canada, Ltd., Sioux City Serum Company, Sioux Falls Serum Company, Royal Serum Company, United Serum Company.

Allied Laboratories, Inc., Pitman-Moore Division, will give prominence in its exhibit to products developed by its research department, including Vermiplex, a new, safer and more effective canine anthelmintic; "Virogen", for immunization against canine distemper without the use of live virus; Mink Distemper Vaccine, Ultraviolet Irradiation-Killed; and Sulbotab, a triple sulfonamide bolutab.

American Optical Company
Booth No. 6

The Scientific Instrument Division of the American Optical Company will exhibit the new Spencer Phase Microscope, with a selection of objectives in dark, medium, and B-Minus contrast. In addition, the pocket-size Hb-Meter (hemoglobinometer), the Bright Line Haemacytometer, and several standard microscopes of Spencer quality will also be shown.

Armour Veterinary Laboratories
Armour and Company
Booth No. 15

Armour Veterinary Laboratories' exhibit at Detroit will again feature outstanding glandular products and surgical gut sutures. Armour Anti-Hog Cholera Serum, a leading and widely used product, will occupy a prominent part of the display.

Arnold Laboratories
Booth No. 26

Arnold Laboratories of New Castle, Ind., will exhibit their distinctive line of dispensing pharmaceutical products for the graduate veterinarian. Calf Scour

Compound and Vitaform will occupy a prominent part of the display and Red Udder Liniment will be featured in the "Magic Fountain." Arnold representatives look forward to meeting you at Booth No. 26.

BALTIMORE WIRE & IRON WORKS
Booth No. 23

Not only the general practitioner with a limited small animal practice, but also the profession in general, will be interested in the new low cost "V" Type Operating Table to be shown. The electrical thermostatically controlled Dog Dryer and the Drain Type Galvanized Steel Cage will also be on exhibit.

BILHUBER-KNOLL CORPORATION
Booth No. 37

Your visits and discussions of the dependable drugs of the Bilhuber-Knoll Corporation will be welcomed. You will find their display carries such original medicinal chemicals as Metrazol—analeptic and stimulant; Tannalbin—intestinal astringent; Lenigallol-pyrogallol—useful in the treatment of skin diseases; and other drugs useful in the field of veterinary medicine.

BRISTOL LABORATORIES, INC.
Booth No. 20

Bristol Laboratories' exhibit will be devoted to the display of many of its antibiotic and pharmaceutical products. Qualified representatives will be on hand to answer any inquiries. Product literature will be available at the booth.

CAMPBELL X-RAY CORPORATION
Booth No. 11

Will display the X-RAY ANIMAGRAPH. A complete x-ray plant for veterinary use, Fluoroscopy (moving pictures), Radiography (still pictures), Therapy (superficial and contact), Portable (for work away from hospital). All in one compact unit designed and built for veterinary use only. The Animagraph is being installed in the better-grade animal hospitals throughout this country and abroad.

THE CORN STATES SERUM COMPANY
Booths No. 40 and 41

The exhibit of The Corn States Serum Company will consist of samples of many biological products produced by the company, and specialties; also products of firms represented as distributors.

CURTS-FOLSE LABORATORIES
Booth No. 32

Veterinarians are invited to visit the Curts-Folse booth where our staff will be on hand to discuss your problems and our products. We will display representative items from our list of "Select Pharmaceuticals for the Veterinary Profession," featuring our new "streamlined" bolus-tablet in selected formulas.

DAVIS PACKING COMPANY
Booth No. 16

This is the first appearance of the Davis Packing Company at an AVMA Convention. Their exhibit features an enlarged facsimile of their 1-lb. U. S. Inspected Frozen Meat Package. This exhibit was first shown at the Frozen Food Convention in Chicago and attracted favorable comment.

EISELE & COMPANY
Booth No. 28

Eisele & Company will exhibit their complete line of Green hypodermic syringes. They will also show their veterinary thermometers, syringes, and needles. They hope all their old friends in the veterinary profession will visit their booth.

FORT DODGE LABORATORIES, INC.
Booth No. 18

Fort Dodge will exhibit such biological products as Hog Cholera Vaccine (Tissue Origin) (Boynton Method), Newcastle Disease Vaccine, Canine Distemper Vaccine

in Streptococcus-Canisepticus-Typhimurium Bacterin (Can-O-Vax) and Anti-Canine Distemper Serum (Homologous). Also Fort Dodge pharmaceuticals, including Penicillin Bougies, Engo, Intragel, Ringet, Sulquin, and other items of timely interest.

GAINES DIVISION—GENERAL FOODS COMPANY
Booth No. 3

The makers of Gaines dog foods will have an educational display on the work of the Gaines Dog Research Center and the Gaines Research Kennels. Attendants will be on hand at the booth to answer any questions visiting veterinarians may have for them.

GOSHEN LABORATORIES, INC.
Booth No. 27

Goshen Laboratories will display products of its own manufacture among which are Derma-Calm, Mineral Yeast, and Foot Rot Ointment. Also products manufactured by concerns for which it acts as sole agent: Ciba Pharmaceutical Products, Inc., Eaton Laboratories, Inc., Glendale Veterinary Supply Co., Micro Instrument Co., and White Laboratories, Inc.

HAVER-GLOVER LABORATORIES
Booths No. 42 and 43

You will better appreciate our qualifications to provide a complete Pharmaceutical, Biological, and Surgical service after visiting our exhibit at booths 42 and 43 during the 86th AVMA Convention. The showing of new and improved products and items of equipment will be of interest. We shall be glad to see you at the Haver-Glover Exhibit.

HILL PACKING COMPANY
Booth No. 16

The Hill Packing Company will use its conventional illuminated display as a background for presenting to the membership the first line of Prescription Rations ever shown at a Veterinary Convention. Case histories illustrated in color will be shown to those interested in food therapy. Also on display will be Hill's Dog Food bearing the Seal of Approval of the AVMA-AAHA Joint Committee on foods.

JENSEN-SALSBERY LABORATORIES, INC.
Booths No. 34 and 35

With new exhibit pieces, Jensen-Salsbery Laboratories will display new and improved products for veterinary clinicians together with surgical instruments for large and small animal practice.

KIRSCHNER MANUFACTURING COMPANY
Booth No. 38

Kirschner Manufacturing Company cordially invites the veterinarians to visit their booth. Several new items, recently developed, will be on display. These items will include hospital equipment as well as fracture equipment.

ASHE LOCKHART, INC.
Booth No. 36

Ashe Lockhart, Inc., using an attractive new display, will exhibit a full line of biological products (antiserums, vaccines, bacterins, toxoids, and diagnostic agents), with Canine Distemper Vaccine (Intradermal) as the featured item.

LLOYD BROTHERS, PHARMACISTS, INC.
Booth No. 24

Lloyd Brothers will present a line of outstanding specialties, including a completely new approach in the treatment of acetonemia. In addition, a complete group of large animal tablets and boluses will be shown. They will welcome your visit and consideration of their unique preparations.

S. E. MASSENGILL COMPANY
Booth No. 33

Veterinary pharmaceuticals, backed by fifty-three years of manufacturing experience, will be on display. Massengill cordially invites veterinarians to visit the booth.

MERCK & CO., INC.
Booth No. 39

Malnutrition in swine, characterized by poor growth and diarrhea, has responded to administration of the B vitamins and subsequent feeding of calcium pantothenate, niacin, and riboflavin. This work will be illustrated and some information will be presented on the rôle of vitamin B-12 in animal nutrition.

THE NATIONAL LABORATORIES CORPORATION
Booth No. 1

The National Laboratories Corporation of Kansas City, Mo., producers and distributors of veterinary biological and pharmaceutical products, instruments, and other supplies for sale only to graduate licensed veterinarians, invites and welcomes all to their display in Booth No. 1 at the Detroit AVMA convention.

NORDEN LABORATORIES
Booths No. 29, 30, and 31

Norden Laboratories invites you to visit their booth and inspect their complete line of biological and phamaceutical products and instruments sold exclusively to veterinarians in accordance with their nationally advertised policy. Their 26 branches and distributors in the United States and Canada are always ready to serve you. As a charter member of the Associated Serum Producers, Norden Laboratories is proud to have a part in the extensive educational program of The American Foundation for Animal Health, through which millions of people are acquainted with the activities of the veterinary profession.

PARKE, DAVIS & COMPANY
Booth No. 5

Members of the Parke, Davis & Company Department of Veterinary Medicine will be on hand at the Commercial Exhibits for a general discussion of their products. Benadryl, Nutritive Capsules, and Liquid Germicidal Detergent will be featured. Descriptive literature on other products will be available. You are cordially invited to visit the Parke, Davis & Company booth.

THE QUAKER OATS COMPANY
Booth No. 10

Our display will feature Ken-L-Ration, Ken-L-Biskit, and Ken-L-Meal. We will also supply a registration plan for all veterinarians in which they have an opportunity of winning free food.

RALSTON PURINA COMPANY
Booth No. 8

The Ralston Purina Company exhibit will set forth the Purina policy as to the fields of service to poultry and livestock producers by the veterinary profession and the Purina organization.

SCHENLEY LABORATORIES, INC.
Booth No. 2

Schenley Laboratories' exhibit is devoted principally to penicillin and penicillin products. We will feature our newest veterinary product, Penicillin Ointment Veterinary for Udder Instillation Schenley. You are cordially invited to visit our booth where our representatives will be pleased to discuss any phase of our products with you.

SHARP & DOHME, INC.
Booth No. 12

Sharp & Dohme will exhibit pharmaceuticals and biological products. These will include new dosage forms of various sulfonamides and antibiotics, "Lyovac" Brucella Abortus Vaccine (desiccated) and other lyophilized preparations. Numerous other products of interest to both large and small animal practitioners will be on display.

R. J. STRASENBURGH CO.
Booth No. 13

The sixty-third year of research in the service of veterinary medicine by the R. J. Strasenburgh Co. has produced many new interesting developments. For full information, a cordial invitation is extended to visit Booth No. 13.

SWIFT & COMPANY
Booth No. 14

Swift & Company again will have a colorful and informative display at the Association's annual meeting. The exhibit will feature Pard in cans and Swift's Dog Meal.

THE UPJOHN COMPANY
Booth No. 7

The Upjohn Company will exhibit special selected products applicable to veterinary medicine, featuring Depo-Penicillin. Generous samples and interesting literature will be available for distribution. A representative of our Veterinary Department will be in the booth.

U. S. VITAMIN CORPORATION
Booth No. 25

For the first time in pharmaceutical history . . . aqueous, oral, and parenteral solutions of liposoluble vitamins A, D, and E for greater therapeutic efficacy through more rapid and more complete absorption and utilization. Also full line of veterinary vitamins and nutritional specialties; capsules, syrups, and injectables.

VITAMINERAL PRODUCTS COMPANY
Booth No. 19

Display of all raw materials used in compounding Vitamineral Products Co.'s calcium, phosphorus, vitamin, and trace element supplement, which has been dispensed exclusively through the veterinary profession for more than thirty years.

WILSON & CO., INC.
Booth No. 4

Wilson & Co. will exhibit Ideal Dog Food formulated according to the Wilson exclusive Balamac principle of BALanced AMino ACids. Every structure of the dog's body requires balanced amino acids, which Ideal now offers with the BALAMAC principle. (BALanced AMino ACids.) Stop at booth for your free book on AMino ACids.

WINTHROP-STEARNS, INC.
Booth No. 9

Winthrop-Stearns, Inc., will display their original synthetic pharmaceutical introductions for veterinarians including Istizin, nongriping laxative, in both powder and bolus form; Neoprontosil, injectable sulfonamide; Nemural, effective taeniacide. In addition, three biologicals manufactured by Fromm Laboratories will be featured: Distemperoid Virus, for treatment of early cases of distemper, and for immunizing dogs against distemper; Anti-Fox Encephalitis Serum, for treatment of fox encephalitis in dogs; and their latest introduction, Canine Distemper Vaccine Tissue Origin.

Recent Developments in Food Hygiene Affecting the Veterinary Profession

H. E. KINGMAN, JR., D.V.M.

Chicago, Illinois

THE VETERINARY profession is unique in its position with respect to the welfare of the nation. Unique may mean new, unparalelled, unequalled, unusual, to wit:

New.—We are new in the field of organized veterinary service in spite of the fact that this is the eighty-fifth annual meeting of our Association.

Unparalleled.—Certainly the breadth of our responsibilities are unparalleled by any other group. American agriculture, which supplies food for a large portion of the world, looks to the veterinary profession for the protection of animal health. Some might feel that "American agriculture" encompasses too broad a base in relation to our profession; however, may I point out that food-producing animals furnish a practical means of utilizing agricultural resources such as fodder, pasture, other forages, and surplus grains, and are a means of storing such crops for subsequent use. Thus, livestock not only conserve grain and forage for use in winter, but they also supply the meat and animal fats which have been important in the diets of the people in these areas throughout the years. Also, hides, skins, fertilizers, and other related products have filled a most important economic and social need in the world. Our position, then, with respect to American agriculture is indeed unparalleled.

Unequalled.—The opportunity for rendering service to the nation through the control of diseases and parasites that affect the livestock population has never been equalled. We are faced with the necessity of expanding our livestock production. The needs of Europe and other countries are not for grain and cereals but for livestock products. In addition, our agricultural economy can not stand continued depletion of our natural resources through the production of crops which do not add to soil fertility. Increased livestock production is our most logical safeguard. The total number of livestock on farms per 100 people in this country is near an all-time low. Our supply of livestock hasn't kept up with our population—much less the increasing standard of living. The greatest handicaps to increased livestock production are animal diseases and parasites. In addition to the necessity for increased livestock numbers is the need for improved efficiency which can best be attained through adequate veterinary service. Certainly, opportunities in this field are unequalled.

Unusual.—Veterinarians contribute to public welfare through the suppression of animal diseases transmissible to man, and to the public morale through the treatment and prevention of diseases among the pet animals.

Finally, unique may mean "first" and "last." Consumers of meat and dairy products depend upon our profession for adequate inspection of these products to insure their wholesomeness and edibility. Not only do we play a part in the reproduction and growth of meat-producing animals, but it is our responsibility to follow these products through to their ultimate destination—the dinner table of the consumer. With all of these fields demanding veterinary service, it seems significant that there has been a marked increase in public interest concerning food inspection. There is definite evidence to support the belief that we are at the cross-roads on this question, where, instead of the veterinarian having to convince the public of the need for adequate food inspection, the public is now coming to the veterinarian, insisting that this type of service be provided. The evidence presented before the last session of Congress relative to the financing of federal meat inspection emphasizes the need for adequate, universal veterinary inspection of meat and meat-food products. The nearly unanimous approval of the Kem Bill by both houses of Congress indicates that public interest is solidly behind the basic premise that meat inspection is designed for the public welfare.

There can be no dispute with the fact that the recognition and diagnosis of animal pathology, together with decisions relative to disposition, can be done only by trained veterinarians.

The combined effect of some seemingly unrelated circumstances has placed our profession in a position where it must act

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Dr. Kingman is chairman of the Special Committee on Food and Milk Hygiene.

Presented before the Section on Sanitary Science and Food Hygiene, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

quickly and effectively if it is to properly discharge its obligations. Your Special Committee on Food and Milk Hygiene feels that definite steps must be taken to insure that our profession renders adequate service in this field. The shortage of veterinary personnel; the high prices paid for livestock, resulting in ever-increasing demands for men to enter veterinary practice; the high level of national income and spending power which adds to the attractiveness of small animal practice; together with a false impression that meat inspection is neither a desirable nor profitable profession, all work against the efficient conduct of this service.

MEAT INSPECTION SYSTEMS

Early in 1948, our Committee prepared a questionnaire which was forwarded to each state, asking for information concerning existing meat inspection systems on state, county, and local levels. This was done to determine the extent to which veterinary services were being utilized in this field. We were already aware that only 69 per cent of the total meat produced in this country was prepared under federal inspection. We wanted to know what was happening to the 31 per cent, or 6,000,000,000 lb., for which we did not have records.

This survey revealed that only a few states have a state-wide meat inspection program which provides veterinary antemortem and postmortem inspection. Incidentally, California is one of the states which the Committee feels is doing an outstanding job in this field. A number of states reported adequate inspection being provided at the county or municipal level. Most states, however, provide only a sanitary inspection of slaughtering plants conducted by lay personnel. I will not bore you with the details of this survey; however, I think it will suffice to say that your Committee found what they feel to be an alarming situation existing in a great many instances.

TRAINING FOR FOOD INSPECTION WORK

Because of the tremendous importance of food inspections, we were reluctant to file our report without attempting at least to initiate a program which we felt would be of a constructive nature. Accordingly, during July, a three-day seminar was held for the veterinarians teaching meat inspection at the various veterinary colleges throughout North America. The response to our invitations to the deans of the various schools was gratifying. Of a total of 19 schools, 14 sent representatives to the meeting. The program consisted of a review of veterinary activities in food inspection work by representatives of the American Veterinary Medical Association; Army Veterinary Corps; Meat Inspection Division, U.S. Bureau of Animal Industry; Poultry Inspection Section of the Production and Marketing Administration; and Veterinary Public Health Service. In addition, tours were conducted through various food-processing plants where cattle, hogs, and poultry are prepared for human consumption.

One of the evening meetings was a round table discussion, "Does the Present Veterinary School Curriculum Qualify the Veterinarian for Food Inspection Work?" To us, this was a most important discussion.

We agreed that it was somewhat revolutionary to attempt such a discussion between the men who do the training and those who utilize the services of veterinarians after they leave their respective schools, but we felt that this might well be one way to clarify the thinking of both groups. In a way, it was somewhat similar to getting a seller and a buyer of a commodity together to discuss a specific product.

I would like to give you the three points which I think high-lighted the discussion.

First, the answer to our question "Does the Present Veterinary School Curriculum Qualify the Veterinarian for Food Inspection Work?" most certainly must be answered in the affirmative if we are willing to base our decision solely on the fundamental training that is given over the five-year period that these men are in school.

Second, the answer to this question is a negative one, at the present time at least, if we consider that most veterinary institutions have failed to recognize the importance of food inspection work and, in some instances, have advised their students not to enter this line of work. This is a situation that can and must be corrected immediately. The fact that, from the standpoint of basic training, the veterinarian is the only one trained and qualified to render adequate service in food inspection work certainly makes the recommendation that graduates avoid food inspection work inconsistent with the best interest of our profession.

The third point brought out in this discussion was that veterinary colleges cannot turn out finished, experienced food inspectors who are able to step into responsible positions in an existing food-inspection system or organize a system where one is not already in existence. This fact does not constitute a criticism of our present curriculums, but does point out the need for the establishment of postgraduate facilities to meet such a demand.

In this connection, I would like to quote Dr.

Charles Glen King, scientific director of the Nutrition Foundation, who recently said:

> I would emphasize the potential contribution to human health that is involved in three recent developments:
>
> First, many of our leading schools of medicine and public health are now establishing strong divisions of nutrition to bring modern scientific findings into a prominent place in the training of young medical scientists and in teaching review courses for those who are established in medical practice.
>
> Second, in the food manufacturing industry, most of the executives as well as the scientists are increasingly aware of the responsibility that they share in regard to the protection of public health. They recognize that the future success of the food industry depends in large measure upon how wholeheartedly they accept this new concept. One of the alternatives can be seen in the increased risk of restrictions and regulations by government agencies, based in part upon complaints from the public.
>
> Third, the growing recognition of the complexity of foods and the many effects of faulty nutrition upon human health tend to direct the public into a position of relying upon standard groups of protective foods such as the grains, milk, meat, fish, fruits, and green vegetables."

Veterinarians, regardless of their present fields of endeavor, must take cognizance of the facts so ably presented by Dr. King. Your Special Committee on Food and Milk Hygiene is quite anxious to render service to the Association along this line. We do, however, need the full support and coöperation from each member of the Association, particularly practitioners, if progress is to be made.

It would appear unwise to assume that some other group could do this job of food inspection for us. Likewise, we should not assume that this void can be filled from the ranks of recent graduates. Your committee feels that it behooves every veterinarian to make a careful appraisal of the adequacy of food inspection in his territory. I feel sure that I can speak not only for the members of the Food and Milk Hygiene Committee, but for the AVMA as well, in saying that we stand ready to be of assistance, in so far as possible, in extending the benefits of adequate veterinary food inspection to every community in the United States.

Training the Bees

Bees can be trained to pollenize certain types of plants, says John Long of the Bee and Honey Section, Wisconsin State Department of Agriculture. This training has been used commercially by producers of clover seed. It works like this:

Trays filled with red clover blossoms, liberally sprinkled with sweetened water, are placed near the hives in the morning. The bees visit these first, and, having worked over the blossoms near at hand, they tend to stay on the same type of flower as long as it lasts. Soon they are working the planted crop in the clover field. After several days, the trays may be removed, but the bees will continue to work in the clover as long as blossoms remain.

Yields as high as 12 bu. per acre have been harvested following this type of management, although the usual yield varies from 1 to 4 bu. of seed.

New Findings on Worm Parasitism

Research on worm parasitism, reported to the American Society of Parasitologists* at New Orleans on Dec. 5-8, 1948, disclosed that:

Growth of pigs on a helminth-contaminated lot, compared with those on a clean lot, was retarded prior to attaining a weight of 35 lb. Thereafter, growth of both groups was about the same, although during the third and fourth years the animals on the infested lot required 0.5 to 0.8 lb. more feed per pound of gain.—*Andrews and Jones, U. S. BAI.*

• • •

Inclusion of 1.5 Gm. of phenothiazine in the grain concentrate per animal once daily for periods of four to ten days prevented the development of infective hookworm larvae (*Bunostomum phlebotomum*) in 4 cattle aged 6 months to 2 years. However, daily fecal examinations revealed that eggs were produced continuously.—*Mayhew, Louisiana State University.*

• • •

Generalized icterus due to occlusion of the bile ducts by *Ascaris suis* was responsible for about 8 per cent of all federal hog carcass condemnations from July, 1946, to July, 1947. The condition occurred most frequently in pigs farrowed in late summer or early fall and slaughtered the following spring.—*Spindler, U. S. BAI.*

• • •

Moderate doses of testosterone propionate in immature male chickens and of *alpha* estradiol benzoate in immature females increased their resistance to *Ascaridia galli* infection, while heavy doses made them even more susceptible than untreated birds.—*Sadun, Univ. of Arkansas.*

*J. Parasitol. Section 2, Dec., 1948.

Veterinary Food Inspection Service of the Armed Forces

MAJOR MERVYN B. STARNES, V.C., U.S. Army

Chicago, Illinois

AS A RESULT of experience gained in two major wars, the Army Veterinary Service has gone through an almost complete metamorphosis. At the turn of the century, contract veterinarians were employed in the U.S. Army principally by the cavalry branch. The primary, if not sole duties, of these contract veterinarians were the diagnosis, treatment, and cure of sick, injured, or wounded animals. Following the passage of the National Defense Act, June 3, 1916, veterinarians were commissioned in the Regular Army. At that time, veterinary work was still largely confined to insuring and maintaining animal health as is shown by the fact that of the first 63 veterinary officers commissioned in the Army, 41 were assigned to animal units and 22 to the Quartermaster Corps, where they presumably devoted much of their time to remount duties. It is true, of course, that a limited amount of the time of the 22 officers with the Quartermaster Corps was devoted to food inspection, particularly to the inspection of packinghouse products.

When World War I started, in 1917, the process of commissioning Regular Army veterinary officers was still under way. When the United States entered the war, the remainder of the authorized strength of 118 officers was quickly commissioned. This number, however, was only a small portion of the 2,313 Regular Army and Reserve veterinary officers that served during the first world war. In the reorganization of the Army in 1920, provision was made for 175 officers of the Veterinary Corps. This was cut back to 126 in 1922, which was the authorized strength of the Corps in 1941 when World War II began.

Today (1948), the strength of the Corps is 186 Regular officers and an allotment of Reserve officers according to the strength of the Army. Their assignments are predominantly as food inspectors. Thus, in less than half a century, the army veterinarians have changed from animal doctors to inspectors of food. The transition has followed the pattern of changing military needs. The change from horse to motorized and mechanized outfits eliminated or reduced the need for veterinary services, but, almost at once, the inspection of meat and dairy products became an imposing task in itself. In addition to that new responsibility, improving the rations of the armed forces entailed the services of men who had the technical background necessary to guide, or to help guide, many phases of development work; and the logical heirs to this task were the veterinary officers.

Long known basically as a member of "horse outfits," the veterinary officer of today can be no longer so identified. He now functions with the Department of the Army, the Air Force, and, although not directly assigned, with the Department of the Navy. With the advent of central procurement of subsistence for the armed forces, he has become truly and unmistakably a member of the armed forces, serving as an inspector of food. During World War II, with the Air Force then an integral part of the Army, the veterinary officer inspected for both ground and air forces all subsistence of animal origin and, it is estimated, approximately 90 per cent of that procured for the Navy.

It may be of interest to know the extent to which the services of the veterinary food inspector has been used and to see the phenomenal work load carried by each officer. Durin World War I, the Army Veterinary Corps inspected 1.26 billions of pounds of food of animal origin at numerous purchasing points throughout the nation. The Corps was engaged in these duties from April, 1917, to March 31, 1919,[1] which means that 630,000,000 lb. of food were inspected per year. On the basis of 2,313 officers who served during this period, this figure breaks down further to an accomplishment of rather imposing proportions—approximately 272,000 lb. per man per year!

During 1939, which was the beginning of the national emergency period, 126 veterinary officers inspected approximately a quarter of a billion pounds of foods of animal origin, or a work load of approximately 1.9 million pounds per man per year. Contrast the foregoing figures with the following: At the close of World War II in 1945, 1,826 veterinary officers had inspected, during the preceding year, more than 8.25 billions of pounds of food of animal origin procured by the Army—a work load of 4.4 million pounds per man

From the Quartermaster Food and Container Institute for the Armed Forces, Chicago, Ill.

On April 6, 1949, Major Starnes was promoted to the rank of lieutenant colonel.

Presented before the Section on Sanitary Science and Food Hygiene, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

[1]Merillat, L. A., and Campbell, D. M.: Veterinary Military History of the United States. Burd & Fletcher Co., Kansas City, Mo., 1935.

[2]It is realized that these figures do not accurately

per year.[9] That, you will agree, is a record that should stand for a long time.

ORGANIZATION AND FUNCTION OF THE ARMY VETERINARY FOOD INSPECTION SERVICE

The chief of the Veterinary Division in The Surgeon General's Office of the Department of the Army, who holds the rank of brigadier general, exercises technical supervision over all food inspection services rendered by the officers and enlisted men of the Army Veterinary Corps. Representing the chief of the Veterinary Division on The Surgeon General's staff is the chief of the Meat and Dairy Hygiene Branch. At the headquarters, Quartermaster Corp Inspection Service are the headquarters veterinarian, who is the senior veterinary officer assigned, and deputy headquarters veterinarian. At the headquarters, Market Center System is the field veterinarian of the Quartermaster Corps Inspection Service, who also serves in a dual capacity as headquarters veterinarian of the Army Quartermaster Market Center System. Veterinary officers on duty as attending veterinarians at the various quartermaster corps inspection service offices, market centers, depots, and purchasing offices complete the administrative organization. In each of the six army areas and in the overseas theaters, the army, theater, or other major command staff veterinarians normally coördinate and exercise technical supervision over all inspection activity within the geographical areas of their respective commands. To insure standard procedure and uniformity in results on a nationwide basis, specially selected and qualified veterinary officers under the direct supervision of The Surgeon General serve as traveling veterinary consultants on food inspection, touring all army areas regularly. These consultants give assistance and technical advice where needed.

With the transition of the veterinary officer to a veterinary food inspector, there has been a shift in the conditions under which he works. Effective April 1, 1948, responsibilities in connection with the procurement inspection of perishable and nonperishable subsistence items were assigned to the Quartermaster Corps Inspection Service, a Quartermaster Class II activity operating directly under Purchase Control Branch, Supply Division, Office of the Quartermaster General, with headquarters in New York, N. Y. This service has for the past several years been responsible for inspecting all items procured by the Quartermaster General with the exception of subsistence and a few other supplies.

The significance of this shift of responsibility within the Quartermaster Corps, in so far as the Veterinary Food Inspection Service is concerned, is that in the future this Service, in conducting inspections prior to purchase or inspection on delivery at purchase, will be responsible to, and will be working with, the Quartermaster Corps Inspection Service, rather than with the officer in charge of the procurement agency as has been the case in the past several years.

Under this functional set-up, the veterinary officer has two channels of responsibility rather than one; *i. e.*, he is responsible to the Quartermaster Corps Inspection Service on matters pertaining to the administration and coördination of procurement inspections; and, representing The Surgeon General of the Army, he advises both the officer in charge of the quartermaster inspection service and the officer in charge of the purchasing office on matters pertaining to the veterinary service governing the health of the troops. These functions are closely related and may be performed simultaneously.

Quartermaster purchasing officers are responsible for the procurement of subsistence for the departments of national defense (armed forces). When a purchasing officer awards a contract, the Quartermaster Corps Inspection Service is notified and the headquarters veterinarian is authorized to call directly upon the appropriate commanding general of each of the six army areas to furnish veterinary inspectors to make the various classes of inspection required for the subsistence item. Depot veterinarians confine their inspection to the metropolitan area of the city where the depot is located. Station veterinarians at the army camps under the control of the army areas are usually designated for the inspection of subsistence purchased by market centers. Where station veterinarians at army camps are too few in number for the task, an area-wide veterinary service unit is established to carry the inspection work load. It is an established policy that the veterinary officer located nearest the point where the product is produced or purchased should make the required inspection.

represent the true work load of each veterinary officer during each period selected. Veterinary officers, during World War I were assigned to horse-drawn artillery, animal ambulance units, and horse cavalry, where their only duty was the care of the animals of the command. However, these figures serve to illustrate the point at hand, i.e., increased food inspection.

CLASSES OF VETERINARY FOOD INSPECTION

Officers of the Veterinary Corps conduct nine classes of veterinary inspections, each for a definite objective along the long subsistence supply-line. They are defined and prescribed in the regulations of the Army #40-2150, and have as their objectives: (1) the health and sanitation of animals at time of slaughter (classes 1 and 2); (2) the quality and sanitation of products of animal origin not receiving either class 1 or class 2 inspection (classes 3 and 4); (3) to protect against, or detect, damage or deterioration while in storage (classes 5, 6, and 9); and (4) the protection of the health of the troops at time of issue, or sale (classes 7 and 8).

TRAINING OF VETERINARY FOOD-INSPECTION PERSONNEL

Army veterinary officers and enlisted technicians receive special training in the Medical Department's Meat and Dairy Hygiene School, at the Chicago Quartermster Depot. The school conducts a three-month course for officers and a two-month course for enlisted technicians. The school, ideally equipped and specially staffed, is considered one of the best of such technical schools. To maintain the standards of excellence and the better to qualify veterinary officers, the courses of instruction are constantly advanced in accordance with the pace set by the developmental progress of our modern food industry. Courses of instruction in the following subjects are given: veterinary administration; inspection procedure and establishment inspection; refrigeration and warehousing; types, classes, and grades of fresh meats; sausage; cured and smoked meats; fish and fishery products; poultry and eggs; dairy products; canned meats; rendered fats and oils; army rations; and food poisoning. Nationally known sanitarians, research investigators, and educational authorities are invited as guest lecturers. The courses are further high-lighted by field trips to various food plants and by on-the-job training.

Research on, and development of, veterinary food inspection equipment form another activity at the school and acquaint the veterinary food inspector with practical, modern, and efficient equipment such as is essential to modern food inspection and analysis. It is here, too, that pilot models of kits and cases of new equipment are developed. These are sent, in their development stage, to army camps and packing plants where they are given thorough and rigid field tests by veterinary officers in order to establish their adequacy and serviceability before being adopted as standard.

In addition to the training at the Meat and Dairy Hygiene School, selected officers receive training at the Veterinary Division, Medical Department Research and Graduate School, Washington, D.C., and at the Quartermaster Subsistence School, Chicago, Ill. It is anticipated that training will be available also at civilian colleges and throughout the food industry. Meats and meat products, poultry and poultry products, marine food products, and dairy products will be the subjects under study.

FOOD LABORATORY SERVICE AND STANDARD INSPECTION PROCEDURE

The Army Veterinary Food Inspection Service is complete with a laboratory service. Many army camps and hospitals throughout the country offer limited laboratory facilities; but each army area has complete laboratory facilities where extensive food tests and analyses are conducted, particularly on those foods collected at point of origin inspection. The veterinary service also operates a central laboratory at the Veterinary Division, Medical Department Research and Graduate School, Washington, D.C. Here, in addition to manufacturing biological products and diagnostic materials, it conducts research on diseases of interest to the military service. The central laboratory also operates as a control laboratory for developing, improving, and standardizing throughout the Army the laboratory techniques and the equipment used in analyzing foodstuffs.

Beyond those mentioned, laboratory facilities are available to the veterinary service by the recently established Quartermaster Corps Inspection Testing Laboratories (subsistence)—one located at Chicago, and the second at Philadelphia.

In a constant effort to improve inspection techniques, the Army Veterinary Service is now preparing Standard Inspection Procedure (SIP) manuals to be used by veterinary personnel in conducting inspection of food items, in packaging materials, in marking them, etc. The program will eventually include the preparation of a SIP for every food product commonly purchased by the armed forces. The SIP tells the inspector where to go for inspection, the usual steps in the commercial manufacture, what specific operations in each step must be checked, what product defects may be expected, what inspection equipment is needed, what field tests should be made, what laboratory specimens should be collected, what the basis for accepting or rejecting the products is, and what inspection records should be prepared.

The SIP is valuable not only because of the large variety of foods that must be inspected, but because of its orientation

service to those inexperienced in food inspection. Even the more experienced personnel who have been away from food inspection for a long time will find the SIP useful. Further uses, such as in the inspection of newly developed products and as training manuals in the service schools, may also be mentioned.

COÖPERATION WITH OTHER AGENCIES

Close coöperation must be maintained with all official government agencies operating in the area to which the veterinary officer is assigned. Coöperation should be maintained with these agencies with special regard to the procurement of dairy products, marine foods, and packinghouse products. Every effort should be made to determine the caliber of local milk inspection and, if possible, approve and accept this rather than to undertake the independent inspection of dairy farms and milk plants, which entails making laboratory tests necessary to grade the supply. Periodic or unscheduled random inspections often permit a rating of local health efforts, resulting in acceptance rather than duplication of its efforts. Maintaining cordial coöperative relations with such agencies pays big dividends.

The inspector must bear in mind that the U.S. Department of Agriculture maintains many inspection and marketing divisions that can render invaluable aid to the veterinary food inspector. For example, the Meat Inspection Division of the Bureau of Animal Industry makes all antemortem and postmortem inspections of meat-food animals and enforces sanitary regulations in the plant; the Production and Marketing Administration maintains veterinary inspection in poultry eviscerating plants; the Food and Drug Administration of the Federal Security Agency conducts shrimp and oyster inspection service on a permanent or continuing basis, as well as unannounced sanitary inspections and laboratory analyses of food moving in interstate commerce.

Cordial and proper inspector-contractor relationship is essential. Many contractors are active members of industrial associations that act, in some respects, as an industry policing agency. Members of industry, by uniting in such an association, obtain uniform compliance with laws and federal specifications. They pool their interests and coöperate actively and frequently with the Quartermaster Corps. Such relationship is very beneficial, and should be accepted willingly by the veterinary food inspector. Examples of such associations are the Evaporated Milk Association, the American Meat Institute, the American Dry Milk Institute, and the Poultry and Egg National Board. There are several others equally important.

Supervision of assistants is a vital duty of the veterinary officer. He must never fail to realize that he is personally accountable for the conduct and performance of each of his assistants, whether commissioned, enlisted, or civilian, and that his relationship with industry frequently rests on the attitude his assistants take in their inspectional contacts. It is his responsibility to insure an atmosphere of good will.

ACTING AS A MEDICAL OFFICER

During World War II, the veterinary officer on the staff of the army camp surgeon frequently served in the place of a medical officer as the medical sanitary officer or inspector. In this capacity, he was responsible for the sanitary inspection of messes, water supplies, sewage disposal, and other sources of possible danger. In the inspection of messes, he extended the inspection of foods beyond that which is normally required of the veterinary inspector. He found, in many instances, that food-poisoning outbreaks were due, not to the food itself, but to faulty mess sanitation, food preparation, and handling.

Investigating Suspected Food Poisoning.—The word botulinus, which comes from botulus meaning sausage, has an ominous sound in the ears of most people. Moreover, they are likely to associate food-poisoning outbreaks with spoiled or contaminated meat. Although this is seldom the case, it is imperative that the veterinary food inspector determine at once whether meat or other foods of animal origin are implicated in any reported outbreak of food poisoning. If the outbreak is actually due to the issue of contaminated food, the inspection of which the veterinary officer was responsible, he should immediately locate and suspend issue of the suspect lot until the condition of the food can be definitely established. But he should determine that the source of contamination is in the suspected lot lest large amounts of wholesome food be condemned and wasted. Fear always remains in the minds of the troops after a food-poisoning episode occurs, and lowered morale inevitably results. Therefore, everything possible should be done to incriminate the food at fault and to reassure the personnel involved that every precaution is being taken to prevent a recurrence.

REVISION OF SPECIFICATIONS

During World War II, many federal specifications, intended only for the purchase of food to be distributed in the United States, had to be replaced on short

notice with more adequate specifications dealing especially with packaging and packing and for new products not formerly purchased for the armed forces. With the return to postwar conditions, it was desired to provide either revised federal specifications or national military establishment specifications. These specifications are currently being written and members of the Veterinary Corps are assisting, particularly in those phases where inspection methods are involved.

THE VETERINARY OFFICER OF TOMORROW

The foregoing account has indicated the changes that have occurred in the field of veterinary medicine during the past two wars. Special attention has been given to the military implications. What about the duties and responsibilities of the veterinary officer of tomorrow? Although no one at this time would care to write a detailed prophecy, it can be predicted with considerable confidence that the veterinary officer will work even more closely with the medical officer and that his training will need to be even more intensified than in the past, particularly as regards such postgraduate subject matter as environmental sanitation, epidemiology, and toxicology.

At all events, the veterinary officer of the future is assured a busy, stimulating career. He will never lack an opportunity to display his talents.

Alloxan Diabetes Mellitus

Alloxan (mesoxyl urea, $C_4H_2N_2O_4$), an occasional ingredient of intestinal mucus in diarrhea, appears to be shedding considerable light on the pathology of diabetes mellitus. In experiments on various animals (dogs, cats, rabbits, rats, monkeys) intended to clarify the cause of renal failure, or the so-called crush syndrome, following the severe crushing of a limb, alloxan, in addition to producing fatal nephritis, was found to cause hyperglycemia, subsequent hypoglycemia, and, finally, necrosis of the islets of the pancreas—in effect, true diabetes. An editorial in the *Journal of the American Medical Association* (Nov. 20, 1948) states that large doses of this chemical agent were nephrotoxic and smaller doses diabetogenic without material effect on the renal function. The hypoglycemia of alloxan-treated animals responded to the administration of glucose, but the experimental subjects nevertheless remained permanently diabetic, owing to the damaged islets. In effect, the action of alloxan is comparable to partial pancreatectomy. It has long been known that extirpation of the pancreas will cause diabetes mellitus in dogs, but the selective, degenerative action of alloxan on the islands of Langerhans is something new to be accounted for in veterinary physiopathology.

Tuberculosis and the Vegetative Nervous System

The problem of tuberculosis may eventually be solved by a study of the vegetative nervous system, according to Slauer of Prague (*Casop. Ceskoslov. Vet.*, Sept., 1947). He suggests that a pathologic tendency to tuberculosis is directly dependent upon the condition of the vegetative nervous system. He classifies human beings into distinct personality types, and connects each type with a variation in the vegetative nervous system. He postulates a direct connection between the fundamental vegetative nervous condition and somatic habit through the somatic nervous system. In effect, he concludes that the tendency to an organic disease is a manifestation of a definite fault in the vegetative nervous system; and that this is a primary factor in determining the personality type of the person which secondarily leads to a corresponding somatic habit—V. SKOVAJSA.

Neomycin—Another New Antibiotic

Neomycin is the name given to an antibiotic agent discovered by Waksman and Lechevalier (*Science, 109*, March 25, 1949) which, from preliminary reports, seems to be effective against streptomycin-resistant strains of *Mycobacterium tuberculosis*. The organism producing neomycin, *Streptomyces fradiae*, was isolated from the soil. Since neomycin has not yet been obtained in crystalline form, very little can be said of its chemical nature. Preliminary reports indicate that it is distinctly different chemically from streptothricin and streptomycin.

Aureomycin in Brucella Melitensis Infection.—Aureomycin is the best drug thus far tested for treating human *Brucella melitensis* infection (Spink *et al., J. Am. M. A.*, Dec. 18, 1948). One of the unusual features of this drug, which can be given orally, is that it is more effective than streptomycin in the most serious (*Br. melitensis*) type of Brucella infection, and yet *in vitro* and in the infected chicken embryo it does not inhibit Brucella multiplication as effectively as streptomycin.

Procedure and Technique for Poultry Inspection

P. J. BRANDLY, D.V.M.

Anchorage, Alaska

ADVANCES in epizoötiologic knowledge and the dissemination of this information to the public create a growing demand for the production of poultry meat which is sound, safe, and palatable. Public health officials and veterinarians, generally, are receiving requests to make provisions for an adequate poultry inspection service at a local level. This paper will attempt to explain the scientific basis upon which the inspection of animal foods is based and to give acceptable procedures and techniques for poultry inspection.

The principles governing the disposition of poultry carcasses affected with pathologic processes which render carcasses unwholesome may be expressed in this way. Meat, whether it is of avian or mammalian origin, is unfit for food if:

1) It contains organisms or toxic substances dangerous to the consumer.

2) It contains morbid, necrotic, or neoplastic tissue.

3) It is derived from an animal which shows evidence of an abnormal physiologic state. For example, fever is an abnormal physiologic state. During fever, the metabolic rate is greatly increased and the end products of metabolism accumulate and cause changes in the tissues.

In addition, an adequate inspection service must see that the food is handled in a sanitary manner, in a clean environment, protected from the many possible sources of contamination which attend its preparation, and safeguard it as much as possible during distribution. It is generally accepted that inspection services provided by society must also prevent adulteration, and, in so far as possible, fraudulent and misleading economic practices.

JUDGING DISEASED CARCASSES

As an example of the application of the principles stated above, we will point out the pertinent factors considered in the judgment of carcasses affected with two different types of disease: (1) swine erysipelas infection and (2) infectious laryngotracheitis. *Erysipelothrix rhusiopathiae* infection in turkeys and ducks is frequently seen on the inspection line. The disease has, in many instances, been transferred from birds to man and is, therefore, important from the standpoint of public health. The organism can be isolated from the blood in almost all cases. Fever always accompanies *Ery. rhusiopathiae* septicemia. The muscles and skin of such birds are darkened and dehydrated. Histologic examination of the carcass shows necrotic foci with organisms and focal hemorrhages throughout the musculature. In judging carcasses affected with this disease, the meat is considered unwholesome because it contains: (1) organisms dangerous to the consumer; (2) morbid and necrotic tissue; and (3) there is evidence of an abnormal physiologic state. It seems apparent, then, that birds which show incipient symptoms or minimal lesions should be condemned as unfit for human food.

Natural infection with the virus of laryngotracheitis produces morbid changes only in the mucous membranes of the head and trachea of chickens and pheasants, and is not known to produce disease in man or any other species. The affected tissue produces an exudate which is dried rapidly by the passage of air through the trachea and larynx. Birds have a rudimentary diaphragm and cannot cough effectively and expel the exudate. As the exudate accumulates, dyspnea develops in proportion to the occlusion. If death occurs, it results from asphyxiation as a result of mechanical obstruction. There is no systemic response to the virus and the birds do not develop fever. The affected tissue is removed during evisceration. If the bird has not developed cyanosis to the degree that there are changes in the muscle, no morbid change will be present in the carcass after it is bled and eviscerated. Changes in the muscles are readily apparent after slaughtering and picking.

The principles which necessitate condemnation would still allow the passing of carcasses affected with this disease if there were no cyanosis of the flesh, because there would be: (1) no organisms or toxins dangerous to the consumer; (2) no morbid, necrotic, or reoplastic tissue; and (3) no evidence of an abnormal physiologic state.

In judging carcasses for wholesomeness,

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it should be kept in mind that the first two listed causes for unwholesomeness are frequently applicable to an individual organ or part. Many cases are presented in which the pathology is localized. Abscesses, benign tumors, bruises, and other localized processes usually do not necessitate condemnation of the entire carcass. The third provision is always applicable to the entire carcass. Localized processes may produce systemic response with evidence of an abnormal physiologic

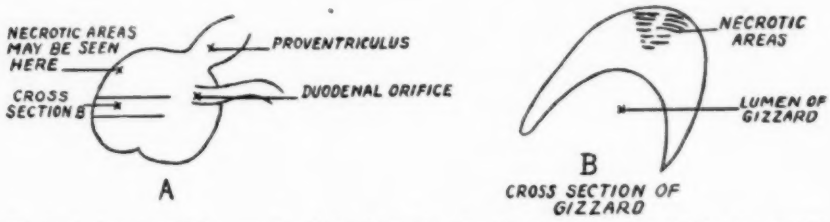

Fig. 1—Lesions caused by muscular dystrophy in the gizzard of a fryer. (A) Whole gizzard. (B) Cross section of gizzard.

state. In such cases, the entire carcass should be condemned.

The foregoing illustrates the localized process which may develop into a systemic condition. Consideration should be given to the systemic condition from which the bird may recover and localized lesions persist. In these cases, the carcass may be passed for food after removal and condemnation of the affected parts.

The poultry inspection service, Production and Marketing Administration, U.S. Department of Agriculture, has published instructions governing disposition of diseased and otherwise unfit poultry carcasses and parts thereof.[1] These instructions can be intelligently followed only by those who have received basic training in the sciences upon which veterinary medicine is based. Logically, therefore, the graduate veterinarian is eminently qualified to perform and direct this important public health program.

ANTEMORTEM INSPECTION

Before an inspection can be made, suitable facilities for such inspection must be provided. For antemortem inspection, the birds should be displayed in open batteries or spindle poultry crates in such a way as to allow the inspector to readily observe all of the birds in each container and to remove from confinement any birds which he wishes to examine further and retain for special slaughter. The examination can be adequately performed very rapidly after one becomes familiar with the points to be considered. It has been found desirable to closely examine the head parts, visually, as the bird stands in the cage. Note should be taken of the color of the comb and wattles, and if there is edema, hyperemia, anemia, dehydration, or lesions of fowlpox or favus on these parts. Birds in production usually have a bright, full comb with a waxy appearance; those not in production show a shrunken, pale comb. Birds of certain breeds which are markedly anemic and have been fed rations containing large amounts of procarotene factors will show yellow skin, fascia, and conjunctiva. These birds appear to be icteric, as the normal blood color does not mask the heavy carotene deposits. Icterus has never been demonstrated in chickens. Anemic birds which have not had the high procarotene factors merely appear pale. The fullness of the face and the position of the eye in the head frequently indicate the state of fat and flesh.

The heads of turkeys should be carefully scrutinized for the presence of erysipelas and pox lesions, and to note if there is a swollen, congested caruncle (snood). An erect, engorged snood seems to be a pathognomonic lesion of swine eypsipelas infection in turkeys. The brightness of the eye and the carriage of the head, likewise, may indicate the state of health of the bird. Usually, birds will be feeding when inspected; those which are not, and appear listless, should be segregated for special slaughter. The condition of the feathers and character of the droppings may be of great importance. Birds which are down and those which are hunched up, with ruffled feathers, should also be segregated for special slaughter. It is not usually considered practical to attempt to handle each bird. Those which are moribund or show lesions, which on postmortem examination would necessitate condemna-

[1]U.S. Department of Agriculture, Production and Marketing Administration: Instructions Governing the Disposal of Diseased Poultry Carcasses and Parts Thereof....Washington, D. C., (Oct., 1945).

tion, should be killed on the spot and tanked or denatured.

POSTMORTEM EXAMINATION

The birds are slaughtered by severing the jugular vein and carotid artery, after which the feathers are removed, the crops stripped, and the vents emptied. The carcasses should then be thoroughly washed before they are chilled to an internal temperature of not more than 45 F. If they are to be held for any length of time before evisceration, they should be chilled to an internal temperature of not more than 38 F. Generally, it has not been found practical to eviscerate birds immediately after slaughter prior to chilling, since the intestinal contents will escape rapidly and contaminate the carcass if an intestine is ruptured during the opening or drawing process. Another consideration is that, in many cases, the warm viscera cause skin reactions among handlers and inspectors in the form of a severe dermatitis. The likelihood of this occurring is greatly minimized when the birds have been chilled.

The birds are then suspended from shackles on an overhead moving chain conveyor. A moving pan directly under each shackle accompanies the carcass through the inspection operation. The back of the neck is slit, and the crop and trachea are carefully removed. The oil sac is removed, and the head is hung from a third point of suspension. This places the backs of the carcasses parallel to the floor. They are opened obliquely from the medial aspect of one thigh to the medial surface of the opposite pubic bone and then dorsally almost to the coccygeal vertebra. Another cut is made from a point on the initial cut immediately above the other pubic bone, up to the coccygeal vertebra, and then across to the terminal point of the initial cut. Care must be exercised to see that the intestine or cloaca are not incised. In young birds, the bursa cloaca is closely adherent to the dorsal wall of the pelvic cavity, and the knife must pass close to the coccygeal vertebra or part of this structure will remain in the carcass. The air sacs and fat adhesions are broken from the sternal surface of the abdominal cavity. The hand is thrust forward in this space to secure the heart and proventriculus between the index and great finger. The entire viscera, with the exception of the lungs, gonads, and kidneys, are removed intact and placed in the accompanying pan. The previous removal of the crop facilitates this operation and minimizes contamination. To examine, the inspector picks up the intact viscera with the left hand, the gizzard lying in the palm. Thorough and adequate palpation of the liver and spleen can then be rapidly accomplished. The intestines should be examined to see if enteritis, peritoneal adhesions, neoplasms, or other pathologic alterations are present.

The gross pathologic changes which are most frequently seen in the livers of birds are: Greatly enlarged livers with or without accompaniment of soft, milky white tumors are practically always the result of visceral lymphomatosis. Those affected by tuberculosis may show multiple small, firm, necrotic foci of millet-seed size, or a few large irregular caseous lesions, surrounded by a dense connective tissue capsule. Many times, it is not possible to see on the surface lesions which are readily discernible on palpation. The swollen liver is an evidence of congestion. It is usually dark. Sometimes, there are small necrotic foci and the organ is friable. Some of these have a mahogany color with a greenish cast. Beaudette states that he has never failed to isolate the fowl typhoid organism from swollen livers with the mahogany or greenish cast. The liver may be covered with small, whitish areas of necrosis in such diseases as fowl cholera, blackhead, etc., particularly blackhead infection in chickens. All of the white or grayish areas appearing in the fresh liver are the result of necrosis, neoplasms, or scar tissue. Livers of turkeys chronically affected with blackhead frequently show massive areas of necrosis with extensive connective tissue proliferation.

Considerable importance is attached to the consistency of this organ by the experienced inspector, and cirrhotic and friable livers are recognized by palpation. Frequently, they contain irregularly shaped, black, firm bodies. These are the unabsorbed blood constituents resulting from a previous rupture of the organ.

The color of poultry livers varies markedly. In broilers and fryers they are fairly uniform, but in mature fowl they may normally vary from a deep, brick red with a purplish cast to yellow and pale pink. Often, those from normal birds show a mottled effect of yellowish blotches resulting from the deposition of large amounts of fat in those areas. The feeding of milk in quantities for a sufficient time will result in livers of an almost white color in fat fowl. Occasionally, ladder-like networks are observed on the surface. These appear to result from the same conditions that produce telangiectasis in beef livers and, histologically, appear strikingly similar.

By grasping the viscera with the gizzard

in the palm of the hand and the fingers extending around the gizzard and liver, the spleen is exposed for visual observation and then palpated by the thumb on one side and the fore and great fingers on the other. The spleen normally may vary considerably in size and color. Hypertrophy of the spleen, as a result of simple increased hematopoietic function, can usually be differentiated from that resulting from infectious disease processes by its consistency and color. Neoplasms of the spleen are usually the result of visceral lymphomatosis. Tuberculous lesions usually are present in the spleen when birds are affected with this disease. Swollen, congested spleens, with or without necrotic foci, frequently occur in septicemic diseases such as fowl typhoid.

The gizzard is examined for foreign body penetration and evidence of muscular necrosis. After cleaning, it should be examined again to see if there is infection with the gizzard worm.

The lungs must be removed from the carcass before examination. Lesions of tuberculosis, aspergillosis, leucosis, pullorum, and typhoid are most frequently found. Abscesses in the lung are not uncommon. Pneumonias are not usually demonstrable grossly in the avian lung. Scalding vat and chilling tank water may enter the lungs. This contamination may extend into the air sacs.

Pathologic processes which affect the heart and its coverings include pericarditis, necrotic areas in the myocardium, hemorrhages, urate deposits, occasional tuberculous lesions, and neoplasms. Pericarditis usually results from *Salmonella pullorum* infection, though occasionally other organisms may be isolated. Petechial hemorrhages frequently occur on the heart and its membranes as a result of agonal struggles. Extensive hemorrhages in the heart muscle are a characteristic lesion of *Listerella monocytogenes* infection.

The avian kidney must be examined in the carcass as it is impracticable to attempt to remove this structure for examination. The kidneys may be mottled, swollen, congested, atrophied, or anemic. Occasionally, the anterior lobe of one kidney may be absent. Neoplasms of the kidney may be frequently observed, the most common being embryonal nephromas and lymphocytomas. The presence of urates in the ureters in birds being slaughtered for food is evidence of a pathologic process.

Descriptions giving the gross pathology of the various diseases of birds often fail to mention the changes which occur in the skin, musculature, and fascia. These changes are readily apparent to the inspecting veterinarian and frequently offer valuable evidence as to the physiologic state of the bird. The perception of the practiced eye in this regard seems almost phenomenal. Changes in the color and consistency of the flesh and skin generally are apparent soon after the bird becomes systemically sick. Darkening and dehydration, which always accompany prolonged fever, are of great significance. Marked alteration in the skin and muscle without other lesion or evidence of disease still necessitates condemnation of the carcass. Normally, the musculature of birds varies considerably with age, sex, diet, breed, and amount of exercise. These conditions, however, can be readily differentiated from those resulting from a pathologic condition wherein the flesh becomes dehydrated and sticky, the skin dry and darker in color, and the fascia take on an adhesive quality.

DISCUSSION

DR. BRANDLY (Washington, D.C.): I've a question to ask this group of eminent pathologists. The problem that confronts me, and it is quite disconcerting, is that, in the gizzards of fryers from the eastern shore (i.e., Delaware, Maryland, and Virginia), a muscular dystrophy is being found. This is a recent finding and has been overlooked in the past or did not occur. The lesions may be described as follows *(see* fig. 1): If you lay the gizzard down with the duodenal orifice up, the lesions are found in the peripheral muscle. White or yellowish foci are strung along on the outside edge and then, to the left, counter clockwise from the proventricular orifice where a heavy muscle is, there are necrotic foci. All I know about the condition is that I can find no caseous necrosis. The muscle seems to disappear. The connective tissue stands up, the blood supply and capillaries remain, but no muscle cells are left in the lesions. Sometimes, there are numerous polymorphonuclear cells, but monocytes are infrequently observed. Jungherr described a similar condition in turkey poults suffering from vitamin E deficiency. I have examined brains from these birds and could find no pathology. Of course, I find incidental lesions, but nothing in the brains. I can't figure out what causes the condition—no caseation; it turns white and the muscle is replaced with fibrous tissue. There are inflammatory elements, but no necrosis, as such, except for the muscle. The whole area shows muscle necrosis. Does anyone here know anything about this condition? Have you ever observed it?

CHAIRMAN DELAPLANE: We never looked for it.

DR. BRANDLY: Thank you.

(Applause).

Rinderpest used to ravage Europe and practically depopulate certain areas of cattle from time to time. These, and other disasters, compelled governments to seek measures to protect livestock. The practical result was the establishment of the first veterinary schools—the French school at Lyon in 1761, the Danish at Copenhagen, the German at Dresden, and others in all of the principal countries.—*W. A. Hagan, D.V.M., Ithaca, N.Y.*

Public Health Research for Veterinary Institutions

DAVID E. PRICE, M.D., D.P.H.

Washington, D. C.

THE U. S. PUBLIC HEALTH SERVICE is the largest organization within the Federal Security Agency. It has four major divisions: (1) The Office of the Surgeon General; (2) the Bureau of Medical Services; (3) the Bureau of State Services; and (4) the National Institutes of Health which encompass the major portion of the research activities of the Public Health Service.

The National Institutes of Health include the Experimental Biology and Medicine Institute, the National Cancer Institute, and the recently established National Heart Institute. The Division of Research Grants and Fellowships is a centralized service unit responsible for administration of the research grants and research fellowship programs of the several Institutes.

The research grants program of the Public Health Service is financed by public funds made available by Congressional appropriations. It is a large-scale, nationwide effort to stimulate research in medical and allied fields. Funds are granted for studies of specific problems on which there is pressing need for information. In granting money for research, the Public Health Service is guided by the philosophy upon which the scientific method rests, *i.e.*, the integrity and independence of the research worker and his freedom from control, direction, regimentation, and outside interference. The autonomy of the individual research worker is assured by this established and accepted philosophy. However, this does not exclude self-imposed concentration on a particular phase of a problem in an organized coöperative research study in which several groups of investigators may collaborate by mutual agreement. Examples of such coöperative research work are found in grants concerned with evaluation of streptomycin in the treatment of tuberculosis, in the clinical evaluation of penicillin treatment of syphilis, and in the studies of the value of dicumarol in coronary disease.

Research grant funds may not be used to relieve any institution of its financial responsibility for normal teaching, administrative, or research functions. Grants are "additive" not "substitutive" and, as such, are intended to provide support for additional research—research that could not be conducted if additional funds were not made available. In order not to penalize a participating grantee, these funds may be used for salaries of substitutes necessary to relieve institutional employees on the regular payroll of teaching duties in order that additional amounts of their time be devoted to the research project. Also, where requested and justified, an amount of not more than 8 per cent of the grant may be allowed the institution for overhead expenses. Thus, with the additive use of these grant funds, and with the modest provision for overhead expenses, the financial structure of a participating institution is not altered significantly.

This outline of the organization, philosophy, and some of the established policies of the research grants program enables us to proceed to a discussion of the more important details. These may be introduced in the form of specific questions, such as: What kinds of research are supported through these grants? Who may apply for grants? How are applications for grants made? How are decisions reached on applications for research grants? What are the periods of support and how is continuity and stability provided? What reports are required of the grantee? What disposition is made of equipment purchased with research grant funds?

What Kinds of Research Are Supported?—According to law, the scope of the grant program encompasses research "relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man." Included is research in the fields of medicine, surgery, dentistry, antibiotics, bacteriology, biochemistry, nutrition, biophysics, cardiovascular diseases, endocrinology, gerontology, hematology, industrial diseases, malaria, psychology, pathology, pharmacology, physiology, public health, neurology, psychiatry, cancer, sanitation, venereal diseases, tropical diseases, virus and rickettsial diseases, and others.

It is evident from the above that much of the research, particularly basic research being carried on, or which could be carried on, by veterinary medical research workers could be considered for reseach grant support. However, the law limits the research grant program to the support of investigatons which either di-

Chief, Division of Research Grants and Fellowships, National Institutes of Health, Public Health Service, Bethesda, Md.

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rectly or indirectly are concerned with the prevention, cause, diagnosis, or treatment of diseases and conditions of man. Much of the basic research in the veterinary medical field obviously can be encompassed within this definition. Clinical work of a nonresearch character and nonmedical investigations in such fields as socio-economics, mathematics, chemistry, and physics do not fall within the scope of the program, although research projects in such fields may be supported if they are viewed as likely to supply information applicable to medical and related sciences. Projects which are purely demonstrations of the application of epidemiologic, diagnostic, therapeutic, or preventive measures in the control of disease do not qualify for research grant support. Research projects which have demonstration aspects but which are essentially research projects may be favorably considered.

Who May Apply for Research Grants?—The Congress has authorized grants-in-aid for medical research to universities, hospitals, laboratories, other public or private institutions, and individuals.

It is apparent that, under the law, no organization or individual is barred from applying for a grant-in-aid for research in a medical field. Although individuals may apply, the Divison of Research Grants and Fellowships encourages individual applicants to affiliate with a university, laboratory, or other organization. Such affiliation greatly facilitates administration of grants, relieves the research worker of responsibility for bookkeeping and auditing, and provides him with better facilities than ordinarily would be available to an individual.

How Are Applications Made?—Applications for grants-in-aid for scientific research in medical and related fields should be made on forms available upon request from: Chief, Division of Research Grants and Fellowships, National Institutes of Health, Bethesda 14, Md. This application form is short and simple and provides for information regarding objectives of the proposed research, contemplated methods, and budget plan.

In order to assist the applicant in preparing the form, a brief set of suggestions is supplied. Applications may be submitted at any time and all applications should be addressed to the Division of Research Grants and Fellowships.

How are Decisions Reached on Applications?—The law requires that applications for grants-in-aid be recommended by one of the national advisory councils before approval by the Surgeon General. Five councils have been established by the Congress to advise the Surgeon General of the Public Health Service regarding means necessary or appropriate to carry out his responsibilties. Among the several duties of each council is this important function of recommending action to be taken by the Surgeon General with respect to applications for research grants. In this, each council may have the technical advice of study sections composed of leading research scientists in various specialized fields.

The National Advisory Health Council consists of 14 members, ten of whom are outstanding *civilian* scientists or public health authorities; the other four represent the National Institutes of Health, the Army, Navy, and the Bureau of Animal Industry. This group is responsible for recommendations regarding all research grants except those that relate specifically to cancer, heart disease, dentistry, and mental health. For recommendation of grants to support research in the latter fields, there are the National Advisory Cancer Council, the National Advisory Heart Council, the National Advisory Dental Council, and the National Advisory Mental Health Council. The number of members varies among these groups, but the basic responsibility and mode of action is the same. Provision is made for rotation of membership every three to five years by the retirement of a proportion of the members each year. The members of each council are chosen for eminence in that particular field and render a great service in attempting to secure support for the best scientific research related to problems of medical and public health importance.

Because of the diversity of fields encompassed by investigations in medicine and its related sciences, these fields were classified, for the purpose of operating this program, into more than 20 major categories. Special study sections have been created in each category and highly specialized scientists provide any of the advisory councils with the benefit of their technical knowldge and advice. Approximately 300 of the nation's outstanding research workers in medical and related sciences serve their colleagues in this way.

These study sections have two major responsibilities: (1) to review applications for research grants in their respective fields, forwarding their recommendations to the appropriate national advisory council; and (2) as scientific leaders, to survey the status of research in their fields in order to discern neglected areas in which research is particularly wanting, and to stimulate the interest of workers competent to undertake needed research.

Most study sections have regular meetings a few weeks in advance of the meetings of the national advisory councils which convene at three- or four-month intervals.

Study sections inform workers in their respective fields, through announcements in appropriate professional journals or other publications, of the availability of research grant funds, and of such other information as will further research in their fields.

The Processing of Applications.—Immediately upon receipt by the Division of Research Grants and Fellowships, each application for a grant is duplicated, and a copy is forwarded to each member of the special study section in whose field the proposed research lies. Each member gives the application preliminary consideration, and if he desires further information on a proposal before the meeting of the section he may request that additional information be secured, or may, upon arrangement with the section chairman, make a visit to the site of the project.

At each meeting of a study section, all applications received since the previous meeting are formally considered before recommendations are made. Action on a grant application may be a recommendation: that it be accepted as submitted; that it be rejected; or that it be deferred pending further investigation or receipt of additional information. Major factors in such recommendations are: the scientific merits of the proposed research; the ability and training of the investigator; the facilities available to the investigator; and such other considerations believed to be pertinent.

Having been considered, the application is transmitted with its recommendation to the appropriate national advisory council. The advice of study sections usually is accepted by the advisory councils, although the latter are not obligated to do so.

Projects recommended by the advisory councils for approval are forwarded to the Surgeon General for his consideration. When a research project has been approved by the Surgeon General, the applicant is notified and a check is sent to the payee.

What are the Periods of Research Grant Support and How Are Continuity and Stability Provided?—In the research grants program, emphasis is not placed on abnormal speed in conducting research, so that projects which may take from three to five years or more may receive favorable consideration.

Grants are usually made for twelve months and may begin at any time during the year. Duration of the proposed investigation is an important consideration of the study sections and advisory councils in decisions regarding their recommendations. Approval of a project which the applicant has estimated will require more than a year to complete signifies a grant of funds for one year and an indication to the grantee of continued favorable action for as long as progress reports justify, and Congress appropriates, necessary funds. If a project requires more than one year to complete, a new application for continuation of the project must be submitted for each succeeding year. These renewal applications are processed in the same way as the original.

A new grant is paid in full at the beginning of the first year. If an investigator needs additional funds during the year, he may file a supplementary application. If any funds remain unexpended at the end of a year, the amount given the investigator for the next year is adjusted. If any funds remain unexpended at the completion of the project, they are returned to the federal treasury.

Equipment purchased with grant funds is the property of the grantee institution rather than of the federal government.

How Research is Conducted.—In order not to divert the time of the researcher unnecessarily from the actual conduct of his investigation, only annual scientific progress reports are requested. It is not desired that these reports be a tedious burden to the investigator, and it is, therefore, requested that they contain only such data in a brief, clear, and concise manner as will permit the appropriate study section and national advisory council to be adequately informed as to the conduct of the investigations since the submission of the previous progress report. In this way, the appropriate study section and national advisory council will be in a position to indorse the grant as it comes up for renewal annually. There may be certain instances in which a group of coöperative research investigators are concerned with a special problem on which interim reports are desired. These, however, are exceptional.

In order to avoid the possibility of restricting the autonomy of the research worker in any way, the Division of Research Grants and Fellowships, the special study section, and the national advisory councils will not review any papers proposed for publication, and, therefore, they are not in a position to indicate either approval or disapproval of such papers published solely at the election of, and under the complete control of, the research workers. This does not indicate any lack of interest in the results of research projects, but is aimed entirely at avoiding any degree of governmental restriction. After papers have been published, however, it is requested that the research workers provide the Division of Research Grants and Fellowships with 50 reprints. It is also requested that published papers carry footnote acknowledgements of the research grant assistance from the Public Health Service.

Once each year, grantees submit simple financial reports to show current status of funds. The purpose of these reports is to facilitate routine auditing of federal funds expended and to permit prompt regranting of any funds which may remain unused at the expiration of yearly grants.

Since any equipment or supplies purchased with research grant funds belong to the grantee rather than to the U.S. Govern-

ment, no terminal accounting for such property is required.

Through Aug. 31, 1948, 1,066 projects have been supported with 1,747 grants totaling $19,242,000. Many of these projects have been assisted by a series of grants over several years.

Interest in this program and requests for assistance have, in certain fields, overtaxed the resources available. This is particularly true in the fields of mental health and in the basic sciences. So many worthy applications have come to us that it has been necessary to ask the study sections and certain of the advisory councils to establish priorities among the projects recommended. We trust that the limited support we have been permitted to give has been, and will continue to be, a great stimulus to the further development of medical research and to the training of scientists so desperately needed in our modern world.

Closer Relationship Urged Between Human and Veterinary Medicine

For the sake of better human health, colleges of medicine and of veterinary medicine have been urged to work more closely together because of the interrelation between human health and animal health. This suggestion comes from Dr. G. E. Wakerlin of the College of Medicine, University of Illinois. Calling attention to the many important medical developments that had their origin in veterinary research and practice, Dr. Wakerlin recommends that colleges of medicine include veterinarians on their teaching staffs, and that veterinary schools broaden their curriculums to include courses in human health, to be taught by doctors of medicine.

Probably less than 25 per cent of cases of leptospirosis show icterus.

Mt. Clemens, the internationally known spa, situated on beautiful Lake St. Clair, is 20 miles from Detroit. The waters are famous for their relief of nervous and rheumatic conditions.

Veterinary Education in Great Britain

W. M. MITCHELL, B. Sc., M. R. C. V. S.

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THE ADVANCE of the profession of veterinary medicine depends upon the standards of its members, and, unless they are based upon education which gives the rising generation a vision of all that is first-rate, it will fail. To progress, we can not be content with things as they are.

The progress of our science has been rapid. I am often bewildered when trying to comprehend all of its ramifications and determine what should be included in the training of students. The enthusiastic specialists must not usurp too much of the time of the over-burdened student.

EARLY HISTORY

To appreciate what is happening to the profession in Great Britain, it is necessary to have a knowledge of its evolution since modern veterinary medical education began in 1791, when the London Veterinary College was founded.

As the result of the agricultural and industrial revolutions in England in the eighteenth century, the agricultural societies developed. It was largely due to the stimulus of the Odiham Agricultural Society that the London Veterinary College was founded. The noted surgeon and comparative anatomist, John Hunter, was one of the founders, and St. Bel, a Frenchman, was the first principal. Unfortunately, these two leaders died shortly and control of the school passed into the hands of a London surgeon, Edward Coleman, who did little to raise the status of the veterinary surgeon. Instead of the three years of training envisaged when the college was founded, he gradually reduced it to three months. How different the formative years of the profession might have been if the guiding hand of John Hunter had continued to support the school in London, as he had spoken of veterinary art as second only to medicine.

In Scotland, the agricultural revolution developed more slowly. The beginning of veterinary medicine, however, was more fortunate. The general educational standards were higher and a capable leader, William Dick, recognized the need. The son of a blacksmith and farrier, he was naturally interested in diseases of horses. In 1817, a friend took him to hear a well-known anatomist, Dr. John Barclay, who lectured in the University of Edinburgh (College of Surgeons). Dick, fired by this lecture, later said, "After hearing him I had the impudence to think that it was possible that I myself might one day deliver a lecture in veterinary science." His appetite for knowledge led him to attend classes of Dr. Barclay and other professors at the University. Later, he received a diploma as a veterinary surgeon after three months at the London Veterinary College. Upon his return to Edinburgh, he gave a short course of lectures on veterinary science in one of the first institutes for adult education, and later established his own private school. The first year, only one regular student was attracted to his private venture but the next year his enrollment increased.

In 1822, the Lord Provost of Edinburgh, probably at Dick's instigation, endeavored to have a chair of comparative anatomy, embracing veterinary physics and surgery, created at the University of Edinburgh. The proposal was rejected and it must have been a blow to Dick's pride, but he showed no resentment. Instead, the rebuff made him more determined to make veterinary art and science worthy of a place alongside the other sciences.

Having received no encouragement from the University, Dick turned for help and advice to Dr. Barclay, a director of the Highland and Agricultural Society of Scotland. None knew better than he the quality of mind and fixity of purpose of young Dick. Dick's turning to Barclay and the H. & A. Society led to the real foundation of the Edinburgh Veterinary School in 1823. A Committee of Veterinary Studies was formed with Barclay and Dick as collaborators. The examination of Dick's students was conducted by medical men, with veterinary surgeons and directors of the H. & A. Society as observers. After seven years, veterinary surgeons also took an active part in the examinations. The certificates were awarded by the H. & A. Society until 1881 and were more highly prized than the diploma of the R.C.V.S.

How well Dick built the school is best expressed by his own words: "The College is the fruit of personal exertion, for I have never owed, nor sought, nor received one farthing from public or private subscription." He paid his own assistants and his school was self-supporting.*

Principal, Royal (Dick) Veterinary College, Edinburgh, Scotland.

Presented before the General Session, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

*When Dick's sister, Mary, died in 1883, veterinary education first became a responsibility of the University through acceptance of half of her estate to found a chair of comparative anatomy.

In 1844, veterinary art was raised to the rank of a profession by Royal Charter which recognized as a corporate body the Royal College of Veterinary Surgeons. One of the functions of this body was to conduct examinations of students to determine their fitness for admission as members of the R.C.V.S.

Unfortunately, the R.C.V.S. mishandled the first examinations it conducted and friction arose. The London College quickly came to terms with the R.C.V.S. and the students took examinations from that body and were known as Members of the R.C.V.S. However, the dispute caused the Edinburgh College to revert, in 1848, to the system of having the H. & A. Society conduct examinations in Scotland and those who qualified were known as veterinary surgeons.

It was not until 1881 that an agreement was reached between the H. & A. and the R.C.V.S., whereby the former ceased to examine veterinary students. The R.C.V.S. received powers by Parliamentary Act to determine who were eligible to have their names on the Register of Veterinary Surgeons. This Act reserved the right of members of the R.C.V.S. to call themselves veterinary surgeons, but unfortunately it did not prevent quackery.

The veterinary schools in Great Britain and Ireland, five at present, are linked with the R.C.V.S. as affiliated schools. They present students for examination by a board of examiners elected by the R.C.V.S., which travels to each school twice a year. The examinations are both written and oral.

This system of uniform control, commonly referred to as "the one portal system," has been highly regarded by the profession, and, until a few years ago, any other method of entry to the profession had little chance to succeed. As long as the schools retained their autonomy, the R.C.V.S., by its examination system and disciplinary control of members, served the profession and public well.

Veterinary art emerged from the dark age of crude empiricism and ignorance, but veterinary schools remained isolated from other centers of learning: the London Veterinary College, because it had reached maturity long before London possessed a university (1828), and the Edinburgh Veterinary College, because the University of Edinburgh refused to take over the emerging school of William Dick.

An outline of the chief points in the evolution of veterinary education in Great Britian is revealed by the records of the Royal (Dick) Veterinary College, except as the H. & A. Society examinations affected the students of that College.

PROFESSIONAL CURRICULUM AND EXAMINATIONS

Highland and Agricultural Society.—From 1823 to 1872, the curriculum extended over one or two sessions, with one examination (oral). In 1872, while the curriculum remained at two sessions, two oral examinations were given. In 1881, the H. & A. Society ceased to examine.

Royal College of Veterinary Surgeons.—From 1844 to 1873, the curriculum consisted of two sessions followed by a single oral examination. In 1873, two examinations (both oral) were instituted. In 1876, three sessions and three examinations (all oral) were required. In 1895, the curriculum was extended to four sessions and four professional examinations. From that time, the examinations have been both written and oral. In 1935, the curriculum was extended to five sessions and five professional examinations.

RECENT DEVELOPMENTS

At about the beginning of this century, moves were made to establish veterinary schools independent of the control of the R.C.V.S., but the profession, by powers granted by the Act of 1881, successfully resisted the attempt of the universities to grant degrees in veterinary medicine. However, the University of Liverpool formed a veterinary school within its University by inviting the New Veterinary College, Edinburgh, an affiliated school of the R.C.V.S., to move to Liverpool. Liverpool University confers a degree of B.V. Sc., the curriculum following the same lines as those required by the R.C.V.S.; but students can not obtain the degree until they pass the R.C.V.S. examinations.

The move by Liverpool University awakened action in London and Edinburgh, and brought about the coöperation between the senior veterinary colleges and the universities of London and Edinburgh. London University confers a degree of B. Sc. in veterinary science for students who have attended the Royal Veterinary College and other veterinary schools in the country.

In 1911, Edinburgh University, in close collaboration with the Royal (Dick) Veterinary College, granted a similar degree but only to students of the College. The science course of London and Edinburgh universities did not follow closely R.C.V.S. examinations, and the clinical subjects were not part of the science curriculum; in Edinburgh, certain special classes had to be taken in addition to those required for the diploma course.

For many years, the number of students taking a degree in veterinary science was small but, in the last ten years, the number has increased, though many who start the course find the burden of two parallel courses too heavy and give up the strug-

gle, remaining satisfied with the qualifying diploma of the R.C.V.S.

Interest in veterinary science by universities spread to Cambridge about eighteen years ago, where a Department of Animal Pathology was formed and the nucleus of a veterinary school has slowly developed, although, so far, veterinary anatomy and clinical subjects are not taught, and the few students who have studied there have transferred to one of the veterinary colleges to complete their training as veterinary surgeons. Another step in the closer association of veterinary education with the universities came in 1934, when the Royal (Dick) Veterinary College was officially affiliated with the University of Edinburgh.

Meanwhile, in spite of the various links with the universities, the financial position of the colleges became worse, which retarded progress. Until World War I, the colleges were able to operate on their own resources but, by the end of the war, government help was necessary. The financial assistance received was not sufficient to build up the standards of education to present-day requirements. Sir John McFadyen said in 1923, "In France and Germany the maintenance grants for a single year before the 1914-1918 war exceeded the total amount given by governments of this country during the last one hundred and twenty years."

The neglect of veterinary education matched the indifference of the state to the effects of the agricultural depression which existed from 1876 until just before World War II, except for a brief period during World War I. Government was interested chiefly in obtaining cheap food for the wage earners. The rise of Hitler awakened the country to the neglect of its agriculture, and the government set up a committee to review the facilities available for veterinary education in relation to the future demand for qualified veterinary surgeons. In its report, the committee pointed out that veterinary education had been starved and that a considerable expenditure would be required to recondition the schools. It also recommended that the R.C.V.S., the schools, and universities should coöperate to supervise veterinary education. World War II deferred little more than preliminary action. In 1943, the committee was asked to reconsider its previous recommendations and submit plans for the improvement of veterinary education.

In 1944, the second report of the committee was published and the chief recommendations were:

1) For the best possible training of veterinary surgeons, the universities should undertake that responsibility.

2) The four existing schools should be incorporated in their respective universities and two new schools should be established at Cambridge and Bristol.

3) Universities providing education should be authorized to confer degrees which would be registerable.

4) A field station and hospital should be attached to each school.

5) The R.C.V.S. should be retained as the governing body with enhanced powers.

6) A special inquiry of unqualified practice is urgent. (A special committee later did this and recommended its abolition.)

Much heated controversy within the profession has occurred since these reports were made. The opinion that the recommendations were in the best interests of the profession eventually prevailed. As the result of meetings between officials of the government, representatives of the R.C.V.S., and other affected organizations, the Veterinary Surgeons' Bill was sponsored, passed both houses of Parliament, and became law in July, 1948. As a result, we stand as a profession on the threshold of a new era.

MAIN POINTS OF VETERINARY SURGEON'S BILL

1) *Training in Veterinary Surgery.*—Universities providing courses leading to a veterinary degree may apply to the Privy Council for the particular degree to be registerable by the R.C.V.S., entitling the holder of the degree to practice. The Privy Council, after consultation with the R.C.V.S., has to be assured that the holder of the degree will have the knowledge and skill necessary for practice before an application will be granted. If educational standards are not maintained, provision is made for the withdrawal of the power to confer degrees.

The determination of the standards of proficiency required for admission to the Register of Veterinary Surgeons is the duty of the R.C.V.S., and power is given to the Council to appoint persons to inspect the facilities of the schools and to attend the examinations leading to degrees. Universities must, upon request of the Council, furnish such information as may be requested.

2) *Restriction of Practice by Unqualified Persons.*—The law specifies that no person shall practice veterinary surgery unless he is registered in the Register of Veterinary Surgeons or in the Supplementary Veterinary Register.

The Supplementary Veterinary Regis-

ter, to be kept by the registrar of the R.C.V.S., will contain the names of those not eligible for the Register of Veterinary Surgeons who apply within one year after this Act goes into effect. Applicants must satisfy the Council that they have been actively engaged in diagnosing and treating the diseases of animals. Under this section, the Act also provides for special licenses to be granted to employees of welfare societies to give first aid and perform minor operations until there are sufficient veterinarians available.

3) *Constitution of the Council of the R.C.V.S.*—Whereas the Council was wholly elected by members of the profession, it will now be reconstituted to consist of (a) 20 members elected by members of the R.C.V.S.; (b) four persons appointed by the Privy Council; and (c) two persons appointed by each university providing veterinary education leading to a degree, one of whom shall be a member of the R.C.V.S.

4) *Disciplinary Powers of the Council.*—The Council shall exercise its powers of removing and restoring names to the Register of Veterinary Surgeons and the Supplementary Veterinary Register through a committee from the Council known as the Disciplinary Committee. For action against persons on the Supplementary Veterinary Register, the Committee will have four persons appointed by the government added to it.

This Bill offers great opportunities to the profession in Great Britain to advance, facing the responsibilities of the future with renewed faith because at last veterinary medicine will take its rightful place beside other curriculums in our universities. Thus, the ambition of William Dick is about to be achieved 126 years after it was conceived. It is too early to say how schools will develop, free from an external examining board.

Edinburgh University has acquired an estate 5 miles from the city for the sciences requiring land for practical operation, and the college has been allotted 240 acres as a field station for its own needs, to correct the disadvantages of being located in a city. Students will reside on the estate all of their fourth year and half of the fifth year.

The field station will include: (1) a field hospital for animals which will be ambulatory clinic headquarters and linked to a clinical pathology department; (2) a teaching farm centered around a department of hygiene and preventive medicine and will include the study of the relation of nutrition to disease—students in their preclinic years will receive training in the care and handling of animals but will not reside at the field station except for periods during vacations; (3) and an experimental section for research.

That is the setup but, like yourselves, we have trouble finding men to take charge of the expanded program. All the schools I have visited here are asking, "Where are the men to teach the students in these new schools?" We face the same problem in Great Britain.

Of course, we have other difficulties in our country. If we could get the lumber, our building program would progress more rapidly. At present, we have to use cement, aluminum, steel, or anything but wood. You have your difficulties, we have ours, and we will get over them.

Gastric Bezoar in a Human Being.—Veterinarians are never surprised to find all sorts of indigestible material rolled up in the digestive reservoirs of domestic animals, particularly of ruminants. In man, such an occurrence is news. Armstrong, physician of Ballymena, Ireland (*Brit. M. J.*, Dec. 4, 1948), reports the surgical removal of a well-formed bezoar of hay and straw weighing 793 Gm. (1lb., 12 oz.) from the stomach of a man. But for dull, aching pain in the epigastrium, the accumulated mass was compatible with health. Except that the patient was a man of low intelligence, details of this unusual pica are lacking in the published report.

LIVESTOCK HEALTH ODDITIES
PET HOSPITAL
BLOOD BANK
BLOOD BANKS FOR DOGS HAVE BEEN ESTABLISHED IN A NUMBER OF COMMUNITIES TO SAVE THE LIVES OF CANINE PETS.
SOME DEADLY VIRUS DISEASES CAN ACTUALLY BE TRANSMITTED THROUGH THE AIR, AS RECENTLY PROVED BY A CALIFORNIA VETERINARIAN.
CATTLE CONTRACT A FATAL DISEASE KNOWN AS "HARDWARE HEART" CAUSED BY ACCIDENTALLY EATING WIRE AND NAILS LEFT IN BARN, YARD AND FEED.
American Foundation for Animal Health

Fractures of the Third Phalanx and Sesamoids in the Race Horse

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FRACTURES of the sesamoid and third phalanx bones rank among the most serious injuries to which the Thoroughbred is subject. These fractures are of special interest to horse owners, trainers, and veterinarians, because they subject the animal to loss of time, resulting in the suspension of its earning capacity. The healing of these fractures is always slow and is frequently unsatisfactory, with the possible loss of usefulness as a race horse.

FRACTURE OF THE PROXIMAL SESAMOID BONES

The proximal sesamoids are two, three-sided, pyramid bones, situated behind the distal end of the large metacarpal bone. They are imbedded in a layer of cartilage, the volar surface of which forms a groove for the deep flexor tendon.

Fracture of the sesamoid bones is the most common type of fracture found in the Thoroughbred race horse. This is due primarily to the excess speed to which it is subjected. Slow motion and still pictures taken of the Thoroughbred, while running, have shown that, as the weight is brought to bear on the front foot, the angle between the metacarpal bone and pastern is about 90 degrees. The pull of the suspensory ligaments and distal sesamoidean ligaments on the two sesamoid bones at that instant is very great, and this is the time when the fracture is most liable to occur.

History.—The history will vary according to the severity of the fracture. In a simple fracture, where there is a small portion of only one sesamoid fractured, the horse will finish the race or work, and, after being pulled up, may or may not show symptoms of lameness. It is common, however, for the horse to take a few lame steps after it pulls up and starts back to the barn. After it is washed and is put on the walking ring, it will take several lame steps, placing weight only on the toe. It is walked for thirty to forty-five minutes with little, if any, apparent signs of lameness. Then, it is rubbed down (approximately 5 to 10 minutes) and is ready to be put away. As the horse is lead to the stall, it shows definite signs of lameness and, in most cases, will keep the ankle flexed, unable to place any weight on the foot.

Etiology.—I believe some of the reasons causing the fracture of sesamoid bones are:

1) Long, sloping pasterns, especially in small-boned horses.

2) Small, soft bones, which might be hereditary or due to malnutrition during the early stages of development. This condition may be carried into the training and racing period.

3) A horse's natural gait may sometimes be a cause. Race horses that run smoothly, and do not have a tendency to pound, are less likely to fracture the sesamoid bones.

4) Track conditions are thought to be a cause. Horses running over hard tracks, having little cushion, are more liable to break sesamoids than when running on a track that has a soft, deep cushion. Good tracks with smooth, even surfaces, free from holes, clods, and rocks are of great interest and importance to the horsemen and racing associations. It is of more consequence to have sound horses than to have races run in record time. The ideal toward which the management strives is to have a good cushion on the track—yet have it a fast track.

5) It is thought that such a fracture is probably induced when the foot strikes an uneven surface, or when the animal steps in a hole. In doing so, more weight is thrown on the toe of the foot, allowing greater pressure to be brought on the flexor tendon and sesamoid bones.

6) Improper shoeing is also a cause. It is necessary to reset and replace the shoes, keeping the foot level. The toe should not be allowed to grow too long as that induces

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more pull on the ligaments, thereby producing more strain on the sesamoid bones.

Symptoms. — Upon examination, the horse will stand with the injured leg extended forward, resting the foot on the toe,

Fig. 1—Fracture of medial sesamoid bone.

with the fetlock flexed. There will be considerable inflammation present and some swelling of the area of the sesamoid. The horse will show evidence of pain when pressure is applied to the sesamoid. There is no depression indicating separation of the two pieces of the bone, and no crepitation. This lameness persists for about ten days, at which time the horse will stand and walk soundly in the stall. If made to turn sharply on the injured leg, it will show some soreness. The swelling and inflammation will persist for about one month.

Diagnosis.—In a simple, complete, transverse fracture of only one sesamoid, where the small fragment has been broken from the distal part of the bone, a positive diagnosis can seldom be made without the aid of the x-ray. Several x-ray pictures should be taken of the ankle, showing lateral, medial, and anterior-posterior views of the sesamoids. With the portable x-ray unit, pictures are easily taken. If the animal is quiet, not exhibiting too much pain, the pictures may be taken with the toe resting on the ground. Otherwise, the leg should be held up, with the assistant holding the cassette in close apposition to the fetlock joint. The use of the fluoroscope in viewing the sesamoids is not satisfactory. If there is only a small portion of the sesamoid fractured, it usually will be off the distal end of the bone and in a triangular shape, with the base being at the articular surface.

Treatment.—Absolute rest is indicated. Tubbing the part in hot water containing Epsom salts, followed by antiphlogistic packs for the first seventy-two hours is important. A plaster cast, extending from the knee to the coronet, should then be applied. A second cast should be put on in seven to ten days, and changed every two weeks for ninety days or longer. The horse should not be allowed out of the stall for four months.

The ankle should be x-rayed at this time. If satisfactory bone repair is shown, the horse may now be walked for a few days before being turned into a small paddock. The small paddock is necessary, because it is the nature of the Thoroughbred to run, and it will do so at the first opportunity. The horse should gradually be placed in larger paddocks. I have found that better results are obtained if the ankle is blistered or fired approximately six months after the injury. I prefer firing, using an iron with a small point. Afterward, a mild leg paint should be used daily for three weeks. Additional x-ray pictures should be taken from time to time. Within twelve to eighteen months, complete union usually will have taken place. At this time, the horse is again placed in training.

Neurectomy may be indicated in some cases, but California racing associations will not allow a "nerved" horse to run.

Prognosis.—Prognosis is favorable if the above prescribed treatment is followed. Owners and trainers sometimes feel that this is a long process, but if the Thoroughbred is valuable, they are willing to coöperate. It all goes back to the old adage, "If you don't wait on a race horse, he will make you wait."

SEVERE AND COMPLICATED FRACTURE OF THE SESAMOID BONES

History.—The history differs in more severe fractures, where both sesamoids are completely fractured or comminuted. The horse will not finish the race or work, but will pull itself up, stand on the track, and show distress, indicating severe pain. It is unable to walk, and therefore, must be taken to the barn in an ambulance.

Etiology.—The causes are the same as for the simple fracture.

Symptoms.—The symptoms are much the same as in simple fracture, except there is always more pain and suffering, with considerable more swelling and inflammation.

There is always crepitation. Depressions are felt between the pieces of bone which are easily moved. This indicates that the cartilagenous pad, which covers and fills the interval between the opposite borders of the two bones, is also torn, thus allowing the pieces of bone to separate as much as ½ to 1 in. The lameness will last much longer, and more time is required for the swelling and inflammation to subside.

Diagnosis.—An x-ray is not necessary unless the knowledge of the exact number of breaks, or degree of separation, is desired. The fact that the toe is not directed upward indicates that there has been no rupture of the deep digital flexor tendon.

Treatment.—The treatment is much the same as for simple fractures. The difference is that the injury will require longer periods of tubbings and application of antiphlogistic packs before the swelling and inflammation are reduced sufficiently for the use of plaster casts. It may be necessary to use the plaster casts longer than in a simple fracture.

Prognosis.—The prognosis is unfavorable for racing purposes because of the displacement of the pieces and injury to the articular surface of the metacarpal bone and to the flexor tendons and ligaments by the sharp edges of the broken parts. There is usually a large and disfiguring callus formation limiting the flexion of the joint. Prognosis is favorable for breeding purposes if the animal is of the quality desired.

COMPOUND FRACTURES OF THE SESAMOID BONES

In cases of the extreme compound fractures, both sesamoids are comminuted. Rupture of the suspensory and deep and superficial digital flexors and tearing of the intersesamoid ligaments occur, thus allowing the fetlock to reach the ground. There is always free hemorrhage with intense pain in the part, and profuse sweating of the whole body.

There is no satisfactory treatment. The animal is destroyed immediately for humane reasons.

FRACTURE OF THE THIRD PHALANX OR OS PEDIS BONE

This fracture is less common than that of the sesamoids; even so, many fractures of this type occur during the racing season. A number of years ago, before the use of the x-ray in the field of veterinary practice, fractures of the third phalanx, in fact nearly all injuries in the foot, were classed by the layman under one nomenclature—a "spread foot." This included all injuries to the foot which did not show any visible, external lesion. Some of the so-called "spread foot" injuries responded successfully to treatment. Some animals, after the lameness subsided, would be placed back in training and would race soundly. Others would, in time, again show symptoms of lameness when submitted to training. Those that stood training no doubt had received only bruises to the sole, wall, frog, or heel area; while the ones that would not train soundly had probably fractured, to some degree, the os pedis bone.

History.—This particular injury generally shows up at the end of a work or a race. After being pulled up, the horse will take a few lame steps, then walk back to the barn, apparently sound. On the other hand, it may not be able to take a sound step. This type of fracture is more prevalent among two- and three-year-olds than in older horses.

Etiology.—Certain pecularities of conformation or structure are major predisposing causes. The most significant of these are soft bones, thin wall or flat sole, shelly hoof, and weak or thin heels. Upright pasterns offer more shock to the third phalanx than more sloping ones. A lack of good feed and balanced rations during the pretraining period, no doubt, is a cause of poor bone development in the Thoroughbred.

Another cause is the extreme speed to which the animal is constantly subjected during his training and racing career. Some horses have a tendency to pound more than others, consequently they strike the ground with a terrific slap. It is probably at that instant that the bone breaks.

Due to the high strung disposition of the Thoroughbred, and its habits while galloping or breezing, the weight is often suddenly and incorrectly placed on the bony column, owing to the momentary failure of the muscles to act in coördination. This may occur when the horse jumps shadows, lands on rough, uneven surfaces, or when it is pulled up or made to turn quickly.

A poor track surface with clods or loose rocks is a contributing cause. The horse may step on a rock or clod on one side of the foot, thus causing unequal distribution of weight on the os pedis bone.

Symptoms.—The horse will extend the foot to the front, either placing it flat on the ground, or resting it slightly on the toe. It will place no weight on the injured foot. There is considerable inflammation, with more heat showing over the quarter involved. The degree of lameness will depend entirely upon the location and severity of the fracture. In fractures involving the articular surface, the animal will show

more pain and exhibit lameness longer than where a small portion of the angle is fractured. Lameness seldom lasts for more than a week or ten days. However, the horse may continue to show some soreness if it is walked on uneven ground, or is made to turn sharply on the foot involved. Inflammation will usually remain in the foot for several months following the injury.

Diagnosis.—Hoof testers will ordinarily indicate the quarter of the foot involved. It may be desirable to inject novocain to block out each quarter as an aid in further diagnosing the point of soreness.

The use of the x-ray is the only positive means of diagnosis. The shoe should always be removed before the pictures are taken. Several pictures, taken at various angles, should be made.

One of two techniques may be used in taking pictures of the third phalanx. If the horse is not too restless, and will allow its foot to be placed on a cassette lying flat on the ground, pictures may be taken down through the foot from several positions. If the horse will not stand quietly enough to use this method, the foot should be picked up and held against a cassette on an assistant's knee.

If the foot is x-rayed immediately following the injury, the break will appear to be very narrow, having little separation. Pictures taken several days later will show considerable separation. The line of fracture never follows the bone perforations of the various foramina found along the distal border of the bone. The break may occur almost any place. Sometimes a bone will break near the angle, or at any point between the angles, involving the articular surface.

Treatment.—The foot should immediately be bathed for an hour or more in a tub of hot, Epsom salts water, followed by a hot antiphlogistine or flaxseed (ground) poultice. This procedure should be repeated daily until there is no further evidence of soreness, probably from ten days to two weeks.

Since the third phalanx has been given a natural cast in the form of a hoof, it is only necessary to assist nature by means of a bar shoe with quarter clips placed on the hoof. It may also be advisable to use tape or a leather strap around the wall of the foot. This allows a minimum of expansion and contraction of the hoof protecting the os pedis bone.

In order to prevent contraction of the heels, the shoe should be removed and reset approximately every two weeks during the rest period. It is well to stimulate the hoof by rubbing the area of the coronet band with tar or reducine at weekly intervals.

Rest is of utmost value. The horse should be given absolute rest for three to four months. After this, it may be walked. Afterward, it should be turned into a small paddock, where it will get some exercise, but will not be able to run. As it improves, it may be turned into larger paddocks, and allowed to exercise at will.

X-rays of the bone should be taken frequently in order to follow the healing process, and to accurately ascertain the length of time necessary for complete repair. The use of the x-ray thereby eliminates all guesswork and makes it possible to know exactly when the horse should be returned to training.

The porous structure of the third phalanx is not conducive to either rapid or solid repair. Most cases require twelve to eighteen months for complete union.

Prognosis.—The prognosis is favorable in young horses, especially in fractures where the articular surface is not involved. If the articular surface is involved in an aged horse the prognosis is unfavorable. It is not uncommon to see a complication develop in the form of a low ring bone if the fracture involves the articular surface. If this occurs, the horse's racing career may be at an end.

Genital Abnormalities

A herd of 104 cows, 49 Guernseys and 55 Holstein-Friesians, had a history of each cow being bred four to 13 times without conceiving before Tanabe and Casida (*J. Dairy Sci.*, March, 1949) began their study of the herd. During their observation, the embryonic death rate for the first thirty-four days following breeding was 65.1 per cent. When slaughtered, 10.6 per cent had visible genital abnormalities which had not been detected by clinical examination. The occurrence was more common in the Holstein-Friesians than in the Guernseys.

A breakdown of the group into three main categories on the basis of reproductive performance during the first thirty-four days following breeding is: (1) failure of fertilization, 39.7 per cent; (2) embryonic mortality and abnormality, 39.2 per cent; (3) embryos still normal, 21.1 per cent.

The length of gestation in Brown Swiss cows varied from 275 to 307 days and averaged 290, studies of 10,000 cows in Switzerland showed.—*Brown Swiss Bull., Jan., 1949.*

Traumatic Gastritis and Frothy Bloat with Special Reference to Surgical Treatment

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THE PURPOSE of this paper is to suggest surgical considerations in the handling of rumenotomies, whether in the hospital where time is not an immediate element, or in the field when a seriously bloated patient calls for quick routine. These suggestions are made with due humility for the small amount of original contribution that can be presented on a subject so frequently described in literature. Nevertheless, these operations remain the most practicable, and the most economically justifiable in the bovine surgical text. Incidentally, we need an up-to-date summation of bovine surgical practices, such as Dr. Danks' "Surgery of the Horse." Apart from saving a valuable cow for a grateful client, the rumenotomy operation, if carefully done on a favorable case or in a well-justified instance, enhances professional esteem as no other operation. Therefore, our goal is the early diagnosis of foreign bodies piercing the reticulum, surgical relief when it can be successfully applied, or the recognition of grave sequlae that have occurred in cases when surgery would have been of little purpose and was not attempted.

Traumatic gastritis occurs most frequently in dairy cattle, especially family cows or carelessly managed herds. The majority of the cases occur during the winter and after parturition. So seldom is reticulitis caused by other than sharp, penetrating objects, that other causes may well be omitted. It is difficult to subscribe to the thesis of reticular contractions forcing objects through reticulum walls, but rather the relation of this liquid-filled pouch between a well-filled rumen and a diaphgram that collapses it.

Diagnosis.—Symptoms vary with the time the patient is observed and with the tissues affected. At first, the rumen may be distended, since pain in this region discourages rumination and is the origin of that false term "atony of the rumen." Acute, colicky pains may be observed at this time. Again, the cow may have little food in the rumen and may be standing, apparently afraid to move, and emitting low groans and grunts; or it may lie down and stretch out flat, extending the neck and finally rising to get relief. The temperature may vary from normal to fairly high, with increased pulse and respiration. While the animal is quiet, it will disclose soreness by kicking or groaning when pressure is exerted on each rib, beginning with the last and going forward to the fourth or fifth, or upon the xyphoid cartilage.

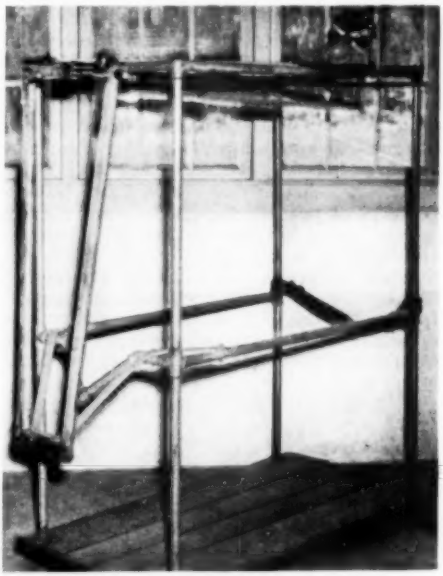

Fig. 1—Bovine operating stocks designed for general surgery in the standing position.

Stiffness of gait and soreness, with a history of one or more previous off-feed and grunting incidences, calls for clinical caution and for the elimination of incidental damage to, or involvement of, the adjacent organs of the thorax or abdomen. These may be pleurisy, purulent pneumonia, lung abscesses, or pressure creating infections of the heart and pericardium. In the abdomen, peritonitis or liver abscesses may be present.

In recalling the close relationship of the diaphragm to the heart and reticulum, the significance of the so-called "dull area" in

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auscultation, as described by Hutyra and Marek, is appreciated. This relationship may result in a small object, frequently only an inch long, being held by the wall of the reticulum and still setting up pericarditis and edema. Thus, when heart sounds may not be audible and the temperature is 104 or 105 F., the case is still favorable for surgical relief.

Treatment.—As veterinarians, we have to be practicable to justify our worth as economic and professional advisors. Your sense of livestock values, supported by tactful inquiry, will establish without precommitment the owner's attitude. It then becomes a part of your function to decide one of three courses: (1) Slaughter if suitable for food, or tankage if hopelessly impaired; (2) to operate; and (3) to fast for several days to lessen pressure and function of the stomach, hoping that the foreign body may thus become fixed in the tissues. Of course, sulfonamides should be administered if necessary, and only when necessary; this advice comes from the experience of presulfonamide days and a great regard for what nature can do when assisted. Remember, the aim is to reduce abdominal pressure. This can be attained in the heavily lactating cow, without impairing production, if it is fed generous rations of whole oats or ground feeds to maintain caloric requirements. Fasting is indicated

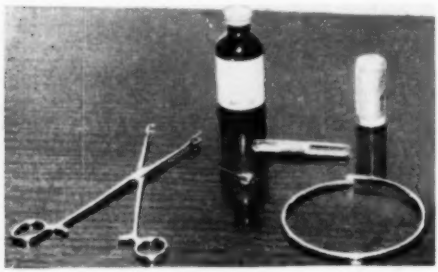


Fig. 2—The Seagraves ring, 2-point vulcellum forceps for securing the rumen to fascia side of incision, and anadolar (H-G 7 per cent procaine anesthetic).

in that subject which, although a paying member of the herd, is of doubtful surgical risk or salvage value due to age or condition. By doubtful surgical risk, we mean a patient with a history of repeated attacks of indigestion and soreness, in which the foreign body may not be removable and the presence of abscesses and adhesions makes intervention hazardous; or, perhaps, there is no *corpus delicti* present. The owner should be advised of the chances involved in these cases, if surgery is chosen, in order to avoid criticism if the animal dies.

Cases unfavorable for surgery are those having a sustained temperature. In these, there is invariably a septic infection. Care should be used in eliminating the possibility of an infected heart. A distended jugular vein, jugular pulse, or beginning infiltration of the submaxillary or cervical region warrants a negative prognosis. Just why the cervical region should become edematous, and not the limbs, has not been explained. I know of no anatomic or physiologic reason for it. One must not accept all distentions of the jugular vein as symptomatic of pericarditis unless supported by fever, the "dull area," or sounds of pericardial fluid. In endocarditis there is venous distention. A progressive distention without fever or tissue infiltration, and a growing tiredness and failing production, is differential. It seems incredible that pericardial pressure upon the right or thin-walled side of the heart is the cause of cervical swelling in traumatic hearts, when the venous stream is also retarded in endocarditis. Edema must be the effect of infection and not pressure. Now, aside from the classical method, the successful handling of foreign body cases will be decided by the ability to recognize pericarditis before, instead of after, operating.

SURGICAL PROCEDURE

The operating frame is bolted to an open plank base, so that it can be turned in the direction of natural light or moved out of the way, but when the animal walks into it, its own weight secures it. It is made of ¾-in. galvanized pipe, with a Jamesway stanchion, shortened by 12 in. or 15 in. You can see that it lends itself to such uses as sterilizing and dehorning, and the instruments are easy to reach.

Lack of preparation causes more after grief than anything else. The patient should be brushed to remove loose hair and dirt and a large area clipped in addition to the shaved area, as for any laparotomy; the area is then covered by a wet shroud dipped in an antiseptic solution. We use procaine, not less than 5 per cent for infiltration, or 2 per cent for paralumbar injections. The anesthetic of choice is anadolar,* which is 7 per cent procaine. It has produced satisfactory anesthesia in quantities of 30 cc. or more, and may readily be reduced to any strength desired by adding water right in the syringe. In most instances, injectable anesthetics for cattle are not strong enough. Two or three deep injections, that will reach the peritoneum

*Produced by Haver-Glover Laboratories, Kansas City, Mo.

on the line of incision, should be made along with subcutaneous infiltration.

The skin is incised with one stroke and the external, oblique muscle is cut only as much as necessary to allow adequate separation. The internal can easily be separated by traction. We have performed these operations many times by complete incision, but faster healing and less sagging result when not completely incised. Most postoperative complications occur from bruising by repeated insertions of the arm when the rumen sleeve does not secure the parts, providing a free opening. This can be accomplished if the inserted ring will hold the rubber sleeve in the rumen when pulled with whatever force is desirable. This ring, made of ⅛-in. spring steel, is 5 in. in diameter. It locks by a point that springs into the bored opening in the opposite end. This permits threading through the rubber sleeve. The exposed rumen is pulled to the surface with one of four pairs of two-point, tenaculum forceps. These forceps permit quick and positive clamping of the rumen to the fascia side of the skin without bruising. When released for closing, a pair at each end of the rumen inscision, in a wide bite, inverts the margins of the incision for easy suturing. Whenever indicated, the rumen should be emptied of ingesta or fluids to below the incision.

No. 1 chromic gut in a continuous stitch is fast and safe. The needle passes from the inside margin to ½ in. of the edge, but in a diagonal course. This zig-zag crossing lessens the amount of suture. If you believe in wearing suspenders and a belt, a second continuous suture 1 in. out will bury this row and increase the serous surface in contact. These surfaces, in a few hours, cannot be pulled apart when they are in apposition and the tissue is not contaminated. This type of suture does away with knots and irregular tension. I look back with horror upon No. 3 and 4 gut and interrupted sutures. The peritoneum and superimposed fascia are closed in the same manner, with a single suture. A jar of cotton pledgets in a boiled saline solution for swabbing the wound, if necessary, should be at hand.

Except for skin disinfection, no antiseptics are used in the wound, not even the indispensable sulfonamides. A sulfonamide ointment smeared over the skin sutures and incision is added protection but, best of all, it keeps the skin from healing too soon.

Years ago, Dr. Ferguson, Lake Geneva, Wis., proposed boiling sutures in paraffin and mineral oil—a soft wax to which phenol was added after slight cooling, since phenol is volatile. Heat the paraffin and oil, add the phenol, and while still warm submerge the jars of suture in it. You will then have an impervious and easily handled suture to hold heavy skin.

Fig. 3—Rumenotomy operation preparation, showing the rubber apron secured by the ring.

Bloat cases that will not respond to the use of the large stomach tube, trochar, or stomach tube medication, are definitely an emergency. These can best be relieved by recumbent rumenotomy. The rumen which will protrude through the opened wall is secured by four forceps to the skin. The patient is rolled partially or completely upon its back and in a matter of seconds the rumen is relieved of its load. The cow is then returned to its side. The margins are swabbed with saline solution. The rumen is clamped shut with these same forceps, and the cow is returned to the standing position for suturing. Of course, use an anesthetic if time permits, especially to deal with the peritoneum. The animal is restrained with two hitches around the body at the thorax and flank. Throw a half hitch around the left leg with the tail end of the rope and draw it well up into the flank region. The cow's straining on the rope keeps the hitches around the body tight. The head is secured by a nose lead in the hands of a competent person. The suturing and aftercare should be the same as for any rumenotomy.

Anaphrodisia is a common result of the feeding of cabbage, according to Rosenberger (*Deutsche Tierärztl. Wchnschr.*, 1944).

Lymphosarcoma of the Stomach of a Horse

A Case Report

WILLIAM O. REED, D.V.M.

Belmont Park, Elmont, L. I., New York

MALIGNANT neoplasms are unusual in the equine species; hence, the following case is believed to be of interest and worthy of report. This animal was a Thoroughbred stallion, 6 years of age. Although he was an exceptional individual and had an excellent pedigree, he failed to live up to his promise as a race horse and was placed in the stud where he sired three crops of foals. He had a severe case of pneumonia as a yearling, but was otherwise normal until the fatal illness.

The first symptoms observed were mild attacks of colic, which gradually became more violent. These attacks were characterized by profuse sweating and restlessness, indicated by pawing and an anxious expression. During these attacks, the pulse was always normal, as were the mucous membranes. Peristaltic activity was varied, and, on rectal examination on two occasions, impaction of the large colon and cecum was detected. On one occasion, the spleen was so enlarged as to be readily palpable per rectum. There were no inguinal or other hernias. Urine analyses were always negative. Unfortunately, the blood was not examined. The symptoms continued during the breeding season, and were manifest almost every day about an hour after coitus.

Treatment was palliative and consisted of administration of sedatives, such as chloral hydrate and magnesium sulfate intravenously. Nux vomica and other tonics were given as the case progressed and the appetite became diminished. Arsenical preparations were also administered intravenously. There was a gradual loss of weight and death occurred approximately nine months after onset of the first symptoms.

Fig. 1—Enlarged and congested cecum and scrotum, which is result of gravitating peritonitis.

Autopsy revealed a rupture of the duodenum associated with necrosis of the bowel wall and generalized peritonitis. The wall of the stomach bore an extremely large lobulated, cauliflower-shaped new growth. The cecum was greatly enlarged.

Fibrinous adhesions were noted on the pleura.

Specimens were submitted to Oscar B. Hunter, M.D., pathologist, Washington,

Fig. 2—The opened stomach showing lobulated areas and a segment of the duodenum.

D. C. The following is abstracted from his report:

The specimen submitted for examination consists of a segment of stomach and intestinal tract which measures approximately 3 ft. in length. A large mass is present over the upper portion. The wall of the stomach and intestine is smooth except for a few small ulcerations in the segment surrounded by the tumor. The tumor measures 30 cm. in diameter and is composed of numerous small and large nodular lesions. These vary in size from a few to 10 cm. in diameter. The surface is rough and reddish white in color. It cuts with increased resistance, exhibiting a lobulated pattern; the central portions of these lobules have undergone necrosis and are demonstrable by the presence of yellowish green, mucinous material. The blood supply to the tumor is rich and numerous large dilated veins are seen coursing over the surface. The surrounding connective tissue appears to be completely involved by the tumor. A small segment of omentum is also attached and this covers, and is particularly adherent to, a part of the tumor. Microscopic sections were taken from the mucosal lining and a number of different areas of the tumor itself.

Microscopic sections through the wall of the stomach reveal some superficial degeneration of the mucosa. The basilar portion of the epithelium, however, is intact and shows no unusual changes. The muscular coat is relatively well preserved, but in the deepest portions it shows some infiltration by the tumor cells. In the numerous sections taken from the tumor the architecture is uniform. The cells contain large, vesicular nuclei with heavy, clumped chromatin, and a moderate amount of cytoplasm, some of which appears granular. In some areas the cells are arranged in long columns between the muscle fibers; in others, the architecture is a monotonous array of nuclei. Mitotic figures are not too common in the over-all picture, but where seen are of a pathologic variety. There are, in addition to the reticulum cells, numerous small inflammatory cells consisting mostly of lymphocytes and polymorphonuclear leucocytes, more common in the areas of degeneration than in the superficial portions of the tissue. There is an adequate amount of fibrous connective tissue and this is accompanied by a fairly good blood supply. Where the tumor infiltrates the muscular wall of the stomach, there is destruction of the muscular fibers and the normal architecture is partially obliterated. There is no evidenec of lymph node structure in any of these tissues, but in some areas there appears to be an increased num-

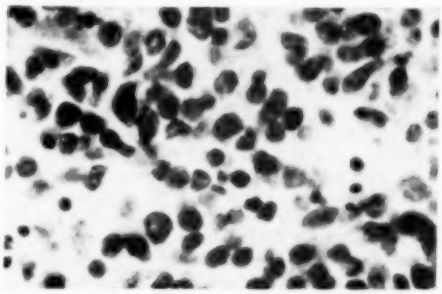


Fig. 3.—Section of tumor showing cells with large vesicular nuclei, heavy clumped chromatin, and a moderate amount of cytoplasm. x 600.

ber of lymphocytes and this suggests a lymph node in the area.

Sections through the duodenal portion of the intestinal tract reveal no particularly unusual features other than superficial necrosis and degeneration described in the stomach.

This is a reticulum cell sarcoma belonging to the large group of lymphosarcomas. The tumor probably arose in the lymphatics of the perigastric tissue, or possibly in the lymph nodes of the para-aortic area. It is impossible to state which of the possibilities is the more likely.

Specimens from this animal were subsequently sent to the Army Institute of Pathology, where the case was placed in the Registry of Veterinary Pathology and bears Accession 181100.

The coöperation of Major T. C. Jones, V.C., U.S. Army, was greatly appreciated in securing photomicrographs and in preparation of the specimen.

A New Technique for Castrating Cats

O. E. MULLINS, D.V.M.
Glendale, California

SUBSEQUENT to a fatality in a male cat from postoperative hemorrhage, I developed the following castration technique.

It is necessary to administer a general anesthetic; I prefer an intravenous injection of sodium pentobarbital. The cat is laid on his back after anesthetization, and the hind legs flexed anteriorly at the coxofemoral articulations by an assistant. The hair is plucked from the scrotum, the hair surrounding the scrotum dampened and slicked down, and the scrotum properly disinfected.

The scrotum and underlying structures are incised just to one side of the midline, care being taken not to cut the tunica vaginalis. The tunica and testicle are then grasped between the thumb and index finger of the right hand (for a right-handed operator), gently pulled loose from the scrotal moorings, lifted upward until the cord is reasonably taut, and then transferred to the thumb and index finger of the left hand. Using a scalpel, the tunica vaginalis is incised over the testicle which allows the testicle to emerge. The point of a straight surgical scissors is now inserted, and the tunica clipped open to a point very near the scrotum. Next, the cremaster muscle is separated from the vas deferens and spermatic blood vessels by blunt dissection. For this purpose, one side of the open scissors is used in a downward motion, starting at the testicle and proceeding toward the scrotum. The tunica vaginalis and cremaster muscle are now severed just above where they pass through the scrotal incision, and also cut away near the testicle. This leaves the testicle suspended by only the ductus deferens and the spermatic blood vessels. These structures are hereinafter referred to as "manens chorda" for descriptive purposes.

A simple overhand knot is now tied in the manens chorda in the following manner: The testicle is held in the right hand, and the manens chorda is grasped between the thumb and index finger of the left hand about an inch above the scrotum. The portion between the scrotum and thumb and index finger of the left hand is hereafter referred to as the "standing part". A loop is then made in the manens chorda by passing the testicle between the operator and the standing part, and continued on around the standing part so that the testicle can be brought through the loop thus formed, from the far side toward the operator. Before the overhand knot is drawn tight, it may be slipped toward the scrotum by holding the testicle in the right hand and pushing the knot gently toward the scrotum with the left hand. During the above procedure, the spermatic blood vessels may have become engorged with blood. Before the knot is drawn tight, the blood may be expressed from the knot by grasping the knot between the thumb and index finger of the left hand. By following this procedure, no blood, and consequently no clot, is trapped in the knot. The knot may then be tightened by tension exerted with the right hand, the fingers of the left hand remaining on the knot to prevent any trauma in that portion of the manens chorda below the knot. The testicle is then removed by severing the manens chorda just above the knot.

The procedure is then repeated on the other testicle. The second testicle is preferably exposed by using the original scrotal incision and cutting through the median raphe. This leaves only one scrotal incision which heals quickly.

This method of castration is simple, quick, and easy. The entire surgery, exclusive of anesthesia and preparation, requires less than a minute. Its advantages are:

1) Elimination of postoperative hemorrhage. This is a tried and tested technique which is very effective. Of the hundreds of cats castrated over a three-year period, I have not had a single case of postoperative hemorrhage or other complication.

2) Simplicity of operation. The only instruments necessary are a knife blade and scissors. No emasculators are necessary. For castrating dogs, two hemostats must be added.

3) No cost for, or preparation of, suturing material. No drainage ensues during suture absorption, since no suture is used.

TECHNIQUE FOR DOGS

A variation of the above technique is necessary on dogs, because the testicle of most breeds is considerably larger than that found in the cat, and hence cannot be as readily brought through the loop for tying. This difficulty is easily overcome. At the point where the knot is ready to be tied, the testicle is lifted with the left hand until the manens chorda is reasonably

tight. A straight hemostat pointed to the left and downward is brought against and across the manens chorda on the side away from the operator. By a counter clockwise motion (looking downward) with the end of the hemostat, and a simultaneous slackening of tension on the manens chorda, a loop is easily thrown around the hemostat. The hemostat is partially opened and then tightly clamped to that portion of the manens chorda between the testicle and loop just formed, and just adjacent to the loop. Another hemostat is clamped across the manens chorda just above the first, and the manens chorda severed between the hemostats.

The knot is then completed by seizing the loop (which is still around the hemostat) between the thumb and index finger of the left hand, and bringing the severed end of the manens chorda through the loop by simply pulling on the hemostat with the right hand. After the knot is tied, it is laid in the inguinal canal and the surgery completed in the conventional manner.

Sterility in cattle is caused most frequently by metropathia, which is a noninflammatory affection of the uterus. In metropathia, the uterine secretion persists, while there is inhibition of the proliferating phase which should follow estrus, as reported by Wille in *Deutsche Tierärztliche Wochenschrift* (1944).

Very fat cows are frequently sterile, but we do not know which is cause and which is effect. These cows can be successfully treated by feeding 25 mg. daily of desiccated thyroid. In large cows, this may be slowly increased to 40 mg. daily, but as soon as weight begins to fall off, the dosage should be gradually decreased.—*J. Farquharson, Colorado.*

Simple Technique of Local Anesthesia for Teat Surgery

Satisfactory local anesthesia in operations for relieving occlusion of the teat orifice in cows was obtained by introducing into the teat 10 to 20 cc. of a 4 per cent solution of novocain (or any similar local agent) by means of a catheter.

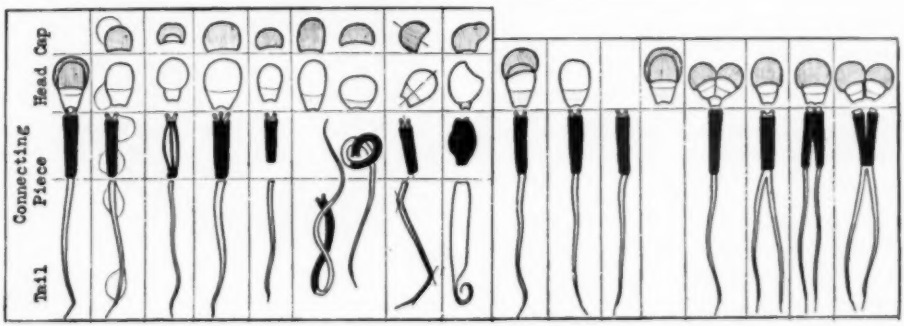
The upper extremity of the teat was tied off with tape and the milk withdrawn by means of a small-bore catheter, after which the anesthetic was introduced. Surgery was started ten minutes afterward, with no further restraint being needed.—*B. Ben-David and E. Schwartz, Refuah Vet., July, 1948.*

Excessive publicity on the value of the newer chemotherapeutic agents in the control of wound infections has caused some persons to neglect the basic principles of surgery.—*A. G. Danks, D.V.M., Pennsylvania.*

The use of penicillin and sulfonamides has not made it possible to abandon any of the established surgical procedures for controlling wound infections.—*A. G. Danks, D.V.M., Pennsylvania.*

In veterinary medicine, the use of a bandage should serve a definite purpose, such as to reduce hemorrhage, to control development of granulation tissue; the latter is especially true below the hock and the knee.—*W. F. Riley, D.V.M., Michigan.*

Tonsillectomy. — Often, preserving enlarged tonsils is more important than removing them. Tonsils must not be removed just because they are enlarged. They participate in protecting the body against infections. The harmful tonsil is the one responsible for recurrent sore throat.



—*From Tydschrift voor Diergeneeskunde*

Bovine Spermatozoa—the first one (left) is normal, the others morphologic variations.

Form, Development, and Topography of the Stomach of the Ox

JAMES D. GROSSMAN, D.V.M.

Columbus, Ohio

THE DIGESTIVE disturbances that arise in the cattle practitioner's routine work are many, and not all of them deal with the adult animal. Conditions affecting all ages, beginning with the newborn calf, must be considered.

The ox has a compound stomach, composed of four compartments, viz., the rumen, reticulum, omasum, and abomasum.

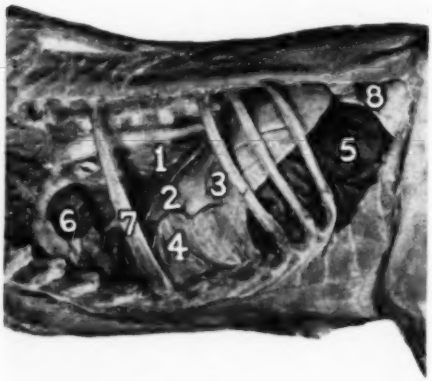


Fig. 1—Newborn calf, lateral view. (1) Esophagus; (2) reticulum; (3) rumen; (4) abomasum covered by greater omentum; (5) small intestines; (6) heart; (7) seventh rib; and (8) left kidney.

The compartments are plainly marked on the surface by constrictions. The first three parts are nonglandular. The abomasum is glandular and has been termed the "true stomach."

The compartments of the stomach can be distinguished in the early stages of the embryo. In the embryo, as is also true in the adult, the mucous membrane is glandless in the first three compartments and the characteristic folds are present in each of the four compartments.

DEVELOPMENT IN THE NEWBORN CALF

In the newborn calf, the first three compartments have about half the capacity of the abomasum. In the standing position, these three compartments, at this time, occupy the upper anterior portion of the abdominal cavity, and the abomasum lies below them and behind the diaphragm and liver. They do not extend into the ventral third of the body. They have length and width but thickness has not yet developed. The reticular or esophageal groove extends forward and slightly downward. The omasum is in the center of the body in a plane cut through the ninth or tenth thoracic vertebra. The abomasum lies on the floor of the cavity and its fundic portion extends longitudinally backward, continued by the pyloric portion which curves dorsally, slightly, then curves very acutely upward, outward and forward, ending at the pylorus which lies against the flank behind the lower end of the last rib.

The lesser curvature of the abomasum is not in contact with the omasum in its entire length, as is evident by the small size of the omasum of the young calf.

The size of these cavities suggests that

Fig. 2—Cross section of abdomen of a newborn calf. The section cuts 0.5 cm. off the head of the tenth thoracic vertebra. (1) Spleen; (2) rumen; (3) omasum; (4) head of the tenth thoracic vertebra; (5) abomasum; (6) liver; and (7,7') left and right lungs.

Presented before the Section on Surgery and Obstetrics, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

the nature of the feed must be considerably different from that of the adult. In calves whose diet has been guarded carefully and the appetite satisfied properly, a period of four to six months is required for these cavities to develop in size approaching adult proportions, which they will not achieve until about the age of 1½ years.

Fig. 3—Deep dissection of Holstein-Friesian cow. The lungs and pericardium have been removed. Most of the lateral wall of the rumen and reticulum has been cut away. (1) Reticulum; (2) ruminoreticular fold; (3) anterior dorsal sac; (4) anterior pillar of the rumen; (5) ventral sac of the rumen; (6) esophagus; (7) cardia; (8) dorsal sac of the rumen; (9) small intestines; (10) posterior pillar of the rumen; (7R) seventh rib; (7C) seventh costal cartilage.

STOMACH OF THE ADULT OX

In the adult ox, the stomach has the same form as in the calf, but the four parts have reached their relative capacities, the rumen constituting about 80 per cent, the reticulum 5 per cent, the omasum 7 or 8 per cent, and the abomasum 8 or 7 per cent of the total.

The rumen occupies most of the left half of the abdominal cavity and, in a well-filled stomach, the ventral sac will contact the lower half of the right flank; it is separated from the abdominal wall by the greater omentum. Its long axis reaches from the ventral part of the seventh rib or intercostal space almost to the pelvic inlet. Its surfaces are marked by right and left longitudinal grooves which indicate the division of the rumen into dorsal and ventral sacs. These grooves are not opposite each other in the same horizontal plane; the right one is higher, giving the anterior and posterior pillars of the rumen a downward and outward slope of about 45 degrees when viewed in a cross section of the body. The grooves are connected at either end by deep transverse grooves which form the anterior and posterior pillars of the rumen. The dorsal sac is the longer of the two and curves ventrally over the round blind ends of the ventral sac. The anterior end of the dorsal sac reaches the abdominal floor and lies behind the reticulum, from which it is separated by an almost vertical fold which corresponds to the ruminoreticular groove, and this fold is opposite to the ventral end of the seventh rib. The free dorsal edge of this fold is concave and forms the ventral and lateral margins of the ruminoreticular orifice, a large oval outlet of the rumen. The inlet of the rumen is the cardia which is a little to the left of the median plane and 4 or 5 in. ventral to the eighth or ninth thoracic vertebra.

Fig. 4—Cross section of the cow. The section is cut through the ninth thoracic vertebra. (1) Spleen; (2) anterior dorsal sac of the rumen; (3) ruminoreticular fold; (4) reticulum; (5) cardia; (6) omasum; (7) abomasum; (8) liver; (9,9') left and right lungs; (IX) ninth thoracic vertebra; (10) ninth rib; arrows are in the omasal groove.

The mucous membrane is mostly papillated in the blind sacs. The edges of the

pillars, the medial wall of the cardia, and a large part of the wall of the middle of the dorsal sac are not papillated.

The reticulum is the smallest and most anterior of the four divisions. The greater part of it lies to the left of the median plane. Its parietal surface faces forward against the diaphragm and liver and conforms to the curve in the diaphragm. It is opposite the sixth and seventh ribs. The reticular groove begins at the cardia and extends ventrally on the medial wall of the atrium and reticulum, and it inclines somewhat forward and medially to end at the reticulo-omasal orifice. The mucous membrane is raised into folds about ½ in. high which enclose the many-sided spaces or cells; this arrangement suggested its name and also its popular name "honeycomb."

The rounded reticulo-omasal orifice is just to the right of the median plane. It is limited below by the lips of the reticular groove.

The omasum is ellipsoidal in form and somewhat flattened mediolaterally. Its long axis is nearly vertical. It is chiefly to the right of the median plane, opposite the seventh to the eleventh ribs inclusive, and the greater curvature falls backward and to the right. The lesser curvature is short and faces forward and to the left. The cavity is occupied mostly by nearly 100 longitudinal folds, the laminae omasi, which are attached to the greater curvature and the sides. They have a thick concave free edge which is directed toward the lesser curvature.

The omasal groove extends the length of the lesser curvature which carries it ventrally and slightly backward and medially, from the reticulo-omasal to the omaso-abomasal opening.

The abomasum is an elongated sac which lies chiefly on the abdominal floor. The anterior blind end is in the xiphoid region in relation to the reticulum to which it has partial attachment. The body of the sac extends backward between the ventral sac of the rumen and the omasum, and turns to the right behind the latter. The smaller pyloric part inclines dorsally and joins the duodenum at the pylorus, which is usually at or near the ninth intercostal space. The lesser curvature is related to the omasum to which it is attached. The greater curvature gives attachment to the superficial part of the greater omentum.

The abomasum is lined with a soft glandular mucous membrane which forms several extensive spiral folds in the fundus gland region. The lining of the smaller second part does not form folds.

SUMMARY

1) The ruminant stomach should always be considered as a single stomach consisting of four separate compartments, viz., rumen, reticulum, omasum, and abomasum.

2) The compartments of the stomach of the ox take their form very early in embryonic life.

3) The first three compartments are non-glandular.

4) In the newborn calf, the abomasum has about twice the capacity of the first three compartments combined.

5) The compartments reach their definitive relative capacities at about 1½ years of age.

Although BAL (British anti-lewisite) has proved to be a good antidote for most types of heavy metal poisoning in experimental animals, it has failed in lead, thallium, and selenium intoxication.—*Puerto Rico J. Pub. Health, June, 1948.*

The Ford Museum, depicting American history, with the famous Greenfield Village to the right.

CLINICAL DATA

Clinical Notes

Light hogs make better use of skimmilk than heavy hogs. The economical feeding rate varies from 2 to 4 lb. per pig per day.

When radioactive cobalt was given to a cow, only a fraction of it was used in making new blood, the rest being rapidly eliminated.—*Sci. News Letter.*

That the semen of trichomonad-infected bulls is capable of transmitting trichomoniasis to uninfected cows artificially inseminated is no longer a question of doubt.

In addition to the inadequacy of the techniques available for the diagnosis of virus diseases, much remains to be learned about the carriers and shedders of the viruses.—*Karl F. Meyer, D.V.M., M.D., California.*

Bacitracin, used topically as a fine powder or in saline solution, has given good results in conjunctivitis and blepharoconjunctivitis, Northwestern University physicians report.

Widespread use of penicillin for treating bovine mastitis in Europe would increase milk production by 5 million metric tons a year.—*Dr. K. Kesteven, Veterinarian for United Nations FAO.*

Treatment of otitis externa should depend on a thorough examination of the ear canal and a proper classification of the disease. In all cases, the exudate should be removed completely from the ear canal.—*R. E. Witter, D.V.M., Illinois.*

Exogenous Survival of Nematode Larvae.—Studies made by Doll and Hull *(Vet. Med.,* Apr., 1948) of the summertime survival of roundworm larvae on Kentucky pastures revealed that but few larvae of Haemonchus, Ostertagia, Strongyloides, Trichostrongylus, and Oesophagastomum spp.—survived from June through September, as of the years 1945, 1946, and 1947.

Slaughter of 5,000 cattle is required for the production of each million doses of foot-and-mouth disease vaccine being manufactured in Mexico.

Sodium fluoride should be ruled out as an ascaricide in fowl. It is effective only in clinically toxic doses, and is practically negative against Heterakis.—*From Proc. Helminthol., Soc., 1947.*

The New Jersey Agricultural Experiment Station reports that the live virus vaccine for avian pneumoencephalitis which was developed by Dr. F. R. Beaudette has been giving "satisfactory results in every respect."

Dogs, rabbits, and, to a lesser extent, cats are susceptible to the convulsion-producing properties of agene-treated flour. Rats and Rhesus monkeys apparently are resistant.—*J. Nutr., July 10, 1948.*

Two, electrically operated, home pasteurizers, the one-pail type and the one-bottle type, tested by Dr. I. F. Huddleson and coworkers, killed all Brucella organisms in milk or cream when treated according to the manufacturer's instructions.—*J. Dairy Sci., Jan., 1949.*

If the present trend toward feeding sulfonamides as a fowl coccidiosis preventive should be blocked by sulfonamide-resistant coccidia, mepacrine hydrochloride, given in the drinking water, may be a useful alternative. This is the word from Science Service, based on British veterinary experiments with this antimalarial drug.

The milk production of cows milked twelve or more minutes after stimulation (washing the udders with hot water and massaging) was decreased significantly when compared to those milked two minutes after the same stimulation.—*From J. Dairy Sci., Jan., 1949.*

Listerellosis in Cattle and Sheep

RUE JENSEN, M.S., D.V.M., and D. R. MACKEY, D.V.M.

Fort Collins and Greeley, Colorado

LISTERELLOSIS is a sporadic, infectious disease of the central nervous system, characterized by meningo-encephalitis, occurring in most species of domestic animals, and caused by *Listerella monocytogenes*. It was first recognized as a disease entity by Gill[1] of New Zealand in 1931 in sheep. In 1934, Jones and Little[2] observed the disease in cattle in New Jersey; since then, it has been diagnosed in many areas of the United States in both cattle and sheep.

In Colorado, listerellosis was first diagnosed by Harshfield and Deem in 1942 in sheep. Recently, the incidence appears to have increased. The disease has occasioned considerable economic loss to stockmen feeding cattle and sheep.

This paper is a report of observations made on 39 farms where listerellosis occurred naturally during the feeding seasons 1946-1947 and 1947-1948.

OCCURRENCE

In Colorado, prior to the season of 1946-1947, listerellosis was diagnosed annually in two or three herds of feedlot lambs or farm flocks of ewes. Beginning with the season of 1946-1947, and continuing through the 1947-1948 season, the usual number of outbreaks occurred in sheep, and, in addition, numerous cases were diagnosed in feedlot cattle. New outbreaks were observed during the 1947-1948 season. Data from the two-season period have been assembled in table 1. This table shows that during the 1946-1947 season, 22 outbreaks occurred in cattle and two in sheep. These farms were studied through the feeding seasons of 1946-1947 and 1947-1948.

Farms 2, 11, and 20 did not maintain animals during 1947-1948 in the same corrals that contained infected animals during the 1946-1947 season. Farm 23 experienced losses during the second season but no accurate diagnosis was made. Thus, only 20 farms maintained animals in the same corrals during the two seasons. Of these, listerellosis recurred on nine farms only. In 1945-1946, farm 1 contained feedlot sheep in which listerellosis caused heavy losses. During the two following feeding seasons, cattle were maintained in the same pens except during the summer months when the pens were vacant. Listerellosis developed during each of the three successive seasons.

Farms 16, 22, and 37 merit individual consideration. Farm 16 maintained large numbers of cattle concentrated into a relatively small area. New cattle were placed in pens following marketing of finished animals. Fattening continued throughout all months of the year, and large numbers of cattle were present at all times. On this farm, 40 cases were diagnosed during 1946-1947. During the 1947-1948 season, the number of cases diminished to 15. Farms 22 and 37 are the

TABLE 1—Incidence of Listerellosis.

Farm No.	Type Anim.	1946-47 Anim. (No.)	1946-47 Infected (No.)	1947-48 Anim. (No.)	1947-48 Infected (No.)
1	Cattle	40	2	70	1
2	Cattle	30	1	...*	...
3	Cattle	8	1	10	0
4	Cattle	60	1	100	0
5	Cattle	4,000	2	4,000	1
6	Cattle	61	1	100	0
7	Cattle	120	4	140	0
8	Cattle	250	3	100	1
9	Cattle	200	3	200	3
10	Cattle	200	4	200	0
11	Cattle	112	3	0	0
12	Cattle	250	3	300	0
13	Cattle	260	1	350	0
14	Cattle	200	2	100	1
15	Cattle	60	2	60	0
16	Cattle	25,000	40	25,000	15
17	Cattle	120	9	120	0
18	Cattle	100	2	100	0
19	Cattle	2,500	2	400	1
20	Cattle	100	1	...	...
21	Cattle	350	1	350	0
22	Cattle	10,000	3	10,000	44
23	Sheep	900	30	1,000	...
24	Sheep	1,200	100	56**	1
25	Cattle	.....	...	126	1
26	Cattle	.....	...	200	2
27	Cattle	.....	...	125	2
28	Cattle	.....	...	20	1
29	Cattle	.....	...	400	5
30	Cattle	.....	...	350	2
31	Cattle	.....	...	75	1
32	Cattle	.....	...	100	1
33	Cattle	.....	...	25	1
34	Cattle	.....	...	235	3
35	Sheep	.....	...	1,100	110
36	Sheep	.....	...	100	15
37	Sheep	.....	...	1,000	100
38	Sheep	.....	...	300	30
39	Sheep	.....	...	2,500	150

*No information available.
**Cattle during the 1947-48 season.

Dr. Jensen is veterinary pathologist, Colorado Agricultural Experiment Station, Fort Collins; Dr. Mackey is from Greeley, Colo.

Presented before the Section on Sanitary Science and Food Hygiene, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

same property. Large numbers of cattle were maintained in the pens during all months of the year. Throughout the winter months, sheep were fattened in adjacent pens. Listerellosis occurred in cattle during the 1946-1947 season. During 1947-1948, the incidence increased in cattle, and, in addition, the disease occurred in sheep, causing heavy losses and necessitating early marketing.

TABLE 2—Listerellosis in Sheep and Cattle During Two Feeding Seasons

	Outbreaks	Animals	Percentage infected in flocks of over 50 animals	
	(No.)	Total No.	Average	Range
Sheep	7	7,100	8.9	3.3-15.0
Cattle	32	85,603	1.3	0.03-7.5

Fig. 1—Left facial paralysis in a Hereford steer.

The fattening pens of most farms studied were vacant from June 1 through September. Consequently, their cases of listerellosis occurred during the fall, winter, or spring months. However, farms 16 and 22 maintained fattening cattle in the same pens throughout the year. At these farms, the disease occurred only from December through May.

Table 2 shows the average mortality in sheep and cattle during the two feeding seasons.

ETIOLOGY

The exciting cause of listerellosis is the bacterium *L. monocytogenes*. Accessory factors, if any, are not known. The fact that the disease recurred in many pens following intervals of vacancy during the summer months suggested that the causative organism survived in mediums contained in the corral or in living vectors, and from these sources new animals become infected. This is in agreement with Pounden *et al.*[3] who observed listerellosis in cattle following exposure to pens that had previously contained sheep affected with the disease.

SYMPTOMS

The symptoms varied according to the stage of the outbreak at the time observations were made. Early in an outbreak, affected animals were found semicomatose and prostrated, showing an inclination to lie constantly on one side. When the position was changed forcibly, the original position was resumed if possible. Opisthotonos was common. The temperature varied from 103 F. to 104 F. Such cases usually died in from three to five days.

Later in the stage of an outbreak, motor disturbance was prominent. Movements of the posterior limbs were incoördinated. Affected animals tended to walk in circles. The direction of circling was constant in any one animal. Sheep often circled rapidly, pivoting on one posterior limb. Any obstacle in the path of movement was collided with, as if vision was impaired. Aggressiveness was seen rarely in cattle and not at all in sheep. Unilateral facial paralysis was common, especially in cattle. It was manifested by dependence of the ear, ptosis, and by immobilization and dilatation of the anterior naris, all of the same side. Occasionally, unilateral facial paralysis progressed to bilateral facial paralysis. In some cases, the muscles of mastication and deglutition ware paralyzed. Torticollis was seen, but uncommonly. Prostration and coma, often terminating in death, devel-

Fig. 2—Left hemisphere of the brain of a steer, showing inflammation on cut surface of medulla and pons.

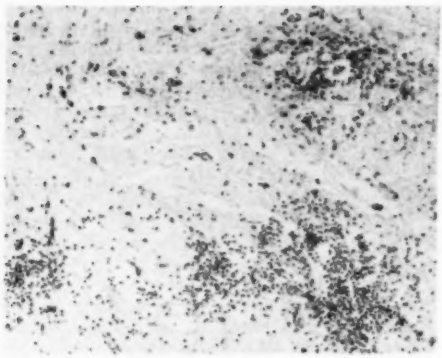


Fig. 3—Photomicrograph of pons of sheep, showing foci of leucocytic infiltration. Nocht's stain. x 100.

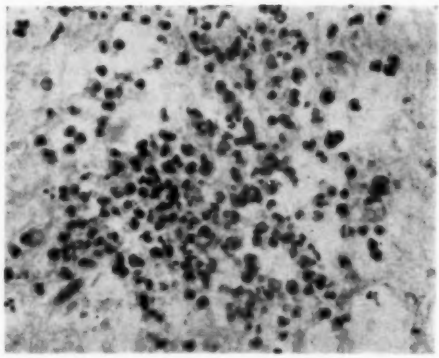


Fig. 4—Photomicrograph (same as fig. 3). x 400.

oped later. The temperature varied from normal to 104 F. Death occurred after a course of from three to ten days.

POSTMORTEM LESIONS

At autopsy of cases of listerellosis, it was common to find no gross lesions. When present, they were limited to the central nervous system. In cattle, an occasional case showed hyperemia, hemorrhages, and softening of the medulla oblongata and pons. Sheep showed no significant gross lesions. Keratitis, described by Graham *et al.*,[5] was not observed except in prostrated animals in which the cornea may have been traumatized.

Histopathologic changes were limited to the medulla oblongata, pons, mid-brain, thalami, and leptomeninges. The medulla and pons were consistently involved. In them, the more sigfinificant changes were foci in the nerve tissue proper of accumulations of leucocytes. These foci varied in size up to 1 mm. in diameter. Each focus consisted of plasma cells, macrophages, and neutrophils, the latter being concentrated at the center of the lesion. Neutrophils appeared to be more abundant in cases that died after a short course than in cases that died after a long course. Frequently, colonies of *L. monocytogenes* were located among the leucocytes, occasionally in the form of short chains. Organisms were occasionally observed in tissue between these foci. Phagocytosis of the organisms by mononuclear macrophages was observed. Inside each accumulation of leucocytes, the nerve tissue was destroyed. The spaces of Virchow-Robin were filled with plasma cells, lympocytes, and macrophages. Neutrophils were occasionally perivascular. The vascular system was hyperemic, and small hemorrhages were common both in

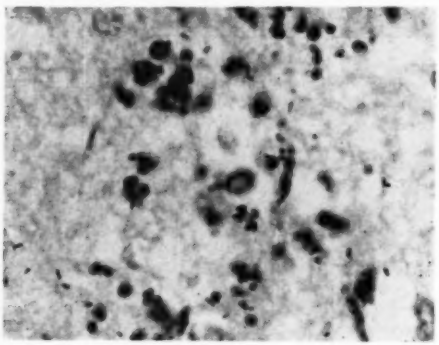


Fig. 5—Photomicrograph of pons of a sheep, showing Listerella monocytogenes in situ in an area of leucocytic infiltration. Gram stain (MacCollum-Goodpasture). x 900.

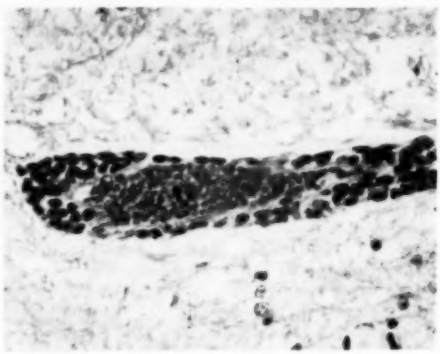


Fig. 6—Photomicrograph of pons of a sheep, showing perivascular accumulation of leucocytes. Nocht's stain. x 400.

the nerve tissue and in the spaces of Virchow-Robin. The leptomeninges were also hyperemic and infiltrated with lymphocytes and plasma cells. Occasionally, the

Fig. 7—Photomicrograph of medulla of sheep, showing meningitis. Nocht's stain. x 400.

leucocytes were concentrated around the vessels.

The brains from 2 recovered steers were examined. These animals showed typical symptoms and were from a farm where listerellosis had been diagnosed by laboratory methods. Following recovery, these 2 animals were returned to the feedlot for an additional fifty days of fattening. At the time of slaughter, all symptoms had disappeared and the animals were in good physical condition. Histologic examination showed that nearly all leucocytes had been removed from the brain tissue proper. A few macrophages and plasma cells persisted and were atrophic and had pyknotic nuclei. No bacteria were discernible. Neuroglial cells had proliferated. Many neurons were degenerated and were being removed by neuronophagy. The perivascular spaces of Virchow-Robin still contained leucocytes. These were degenerated and the types were not easily identified. The leptomeninges also contained leucocytes.

DIAGNOSIS

In order to establish with certainty the existence of listerellosis on a farm, laboratory methods were employed. Once the presence was proved, additional cases on the same farm or area were diagnosed on the basis of symptoms alone.

In the laboratory, a routine procedure was followed. The brain from a suspected case was removed as aseptically as possible. It was divided longitudinally into two equal parts. The brain stem from one half was ground with sterile sand and a heavy inoculum was placed on blood agar plates. After twenty-four hours of incubation, colonies characteristic of Listerella were removed for identification. The isolation of *L. monocytogenes* was considered as evidence of a positive diagnosis. Frequently, Listerella was not isolated from suspected cases.

The remaining half of the brain was fixed in 10 per cent neutral formalin. Sections were prepared from the medulla oblongata, pons, mid-brain, and thalami. Nocht's stain or hematoxylin and eosin, and gram stains were employed. On finding typical histopathologic lesions, especially with gram-positive bacteria resembling Listerella, the diagnosis was considered positive, even in cases from which the causative organism was not isolated.

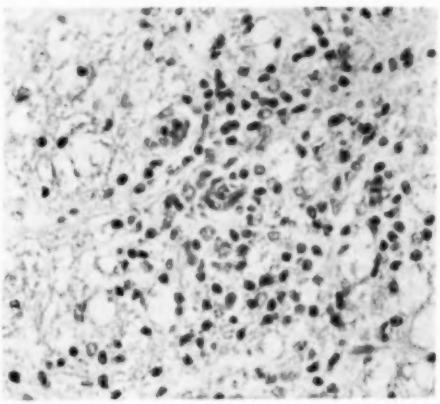


Fig. 8—Photomicrograph of medulla of steer fifty days after clinical recovery, showing gliosis. Nocht's stain. x 400.

In the differential diagnosis, all diseases of the central nervous system were considered. In Colorado, feedlot lambs affected with the chronic form of enterotoxemia become comatose. Such cases usually show no gross lesions and resemble listerellosis. However, the incidence in any herd is low and most of the mortality is from acute enterotoxemia which can be diagnosed by symptoms and postmorten lesions. Histologically, entertoxemia shows no encephalitis.

Abscesses of the brain in both sheep and cattle produce symptoms resembling lis-

terellosis. Abscesses are usually chronic and nonfebrile and are identifiable at autopsy.

Spondylitis in cattle, caused by *Actinomyces necrophorus*, is common in Colorado.

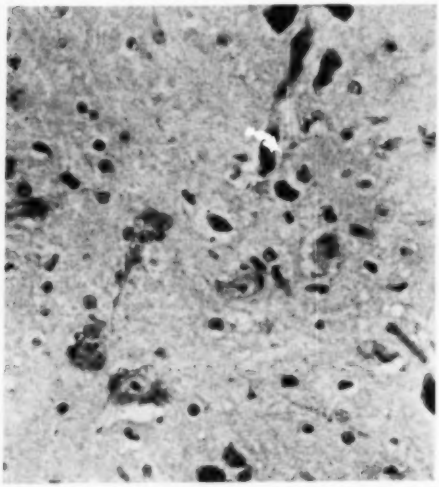


Fig. 9—Photomicrograph of medulla of steer fifty days after clinical recovery, showing neuronophagy. Nocht's stain. x 400.

Such animals first show posterior incoordination and coma in advanced stages. These are easily diagnosed at autopsy.

Malignant catarrhal fever may resemble listerellosis superficially. In this disease, the temperature reaches 106 F. and above. Commonly, the animal is aggressive. Keratitis, rhinitis, and stomatitis are common.

Forage poisoning in feedlot cattle is characterized by blindness, "pushing," prostration, and coma. However, it is nonfebrile and autopsy often shows hemorrhage and softening in the thalami.

The histopathologic lesions of listerellosis differed from the diseases mentioned above and usually formed a basis for positive diagnosis.

TREATMENT

Treatment was limited to cattle. Affected animals were given penicillin and sulfanilamide. An initial dose of penicillin dissolved in physiologic saline solution was given either intravenously or intramuscularly in the amount of 500,000 to 1,000,000 units. A supporting dose of 1,000,000 units dissolved in oil was administered simultaneously, intramuscularly. The penicillin-in-oil was repeated in eighteen to twenty-four hours. In addition, some cases were given sulfanilamide orally, in the amount of $\frac{1}{2}$ gr. per pound of body weight, twice daily.

Supportive nursing was always supplied. Prostrated animals and those unable to obtain feed were fed mechanically.

Approximately 120 cattle were treated during this period of study. Of these, 43 died. Mortality was high during the early stage of an outbreak. Later in an outbreak, when many cases were found before prostration developed, treatment was favorable. Some animals recovered without treatment.

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Swine Ascarids and Thrift

To determine the effect of ascarids on the thrift of growing shoats, Spindler (*Proc. Helminthol. Soc.*, 1947: 58-63) infected 4 pigs, 8 weeks old, and checked their gains against 4 worm-free litter mates during a feeding period of 126 days. Autopsies held at the end of the experimental period revealed that the gains corresponded to the number of adult ascarids the artificially infected shoats were harboring. The 4 uninfected shoats gained 95 to 100 lb. and the infected ones from 0 to 92 lb. The shoat that gained 92 lb. had but 12 worms and the one that made no gain at all showed a worm count of 109. The study established a direct relationship between thrift and the number of adult ascarids the intestinal tract of pigs contains during the growth period.

Quaternaries as an Udder Rinse.—Probably not more than ten udders should be washed with the same batch of chlorine solution, under ordinary conditions. With quaternary ammonium compounds, on the other hand, as many as 30 or 40 udders may be washed with a single batch before there is a significant decrease in germicidal effectiveness. Evidence that quaternaries cause less irritation and chapping than chlorine suggests that they might be more effective in preventing the initiation of udder infections.—*J. Milk and Food Technol., Jan.-Feb., 1949.*

Intestinal Disturbances in Dogs: Differential Diagnosis and Specific Therapy

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INTESTINAL disorders are among the most common diseases seen by the small animal practitioner. Diarrhea has long been considered a symptom of distemper and may be either a complication to other conditions or an entity in itself. In spite of this, no extensive etiologic studies of these conditions have been reported. This is a report of a clinical study of intestinal infections in dogs using a few simple laboratory procedures. The methods of study and the findings have been discussed in more detail in articles published previously.[1-3] Time will permit only a brief description of the various organisms considered important, an outline of the methods recommended for clinical differential diagnosis, and the therapy that has been found most effective for each of the organisms.

INTESTINAL ORGANISMS

The Proteus are a group of enteric bacteria related to Salmonella, Shigella, and coliform groups. Proteus are prevalent in nature and have been considered nonpathogenic for human beings and animals by many bacteriologists, although there is good evidence that they may actually be pathogenic for man. The basis for considering these bacteria, and the other organisms discussed herein, pathogenic has been stated in detail in the reports mentioned previously and will not be given here.

Borrelia eurygyrata is a loosely coiled spirochete found in the intestinal contents or dogs, cats, and other animals. It has been reported at least three times previously: the first time in 1909 by Lucet; in 1936 by Nishiyama; and again by Jungherr in 1937. Each writer considered the organisms capable of causing enteritis in animals. The spirochete can be seen readily under high, dry power in an ordinary fecal smear.

The third organism, Giardia, is a species of intestinal protozoon long known to inhabit the intestinal tract of man and animals. There have been many reports of its presence in dogs, but very little attention has been given these reports and many of the writers failed to understand its importance. Giardia have been considered nonpathogenic for man, also, but the discovery that patients usually improve after atabrine has sterilized the feces of these organisms has led most internists to believe that they are pathogenic.

Coccidiosis is well understood and need not be discussed.

The Salmonella are particularly important because of their pathogenicity for human beings, but they were not often found in this study, so there is little to report about them.

SYMPTOMS AND DIAGNOSIS OF INTESTINAL ORGANISMS

A wide variety of symptoms seem to be associated with the presence of intestinal organisms. These symptoms can best be considered in several age groups. Puppies infected at birth or shortly afterward develop an acute septicemia with peritonitis or omphalitis as the predominant symptoms, and die within a few hours. Older puppies seldom show this generalized infection but develop acute dysentery that is also fatal within a few days. The intestinal symptoms become less acute as the animal becomes older before exposure. Most puppies under 6 months show severe dysentery that does not respond to ordinary treatment and results in stunting and generally poor condition. Many have to be put to sleep after weeks of unsuccessful treatment. Mature animals show a larger variety of symptoms. Diarrhea is not a constant condition in the majority of cases, and the intestinal tract may be overlooked in searching for the cause of the generally poor condition or the other obscure symptoms.

Some of the conditions that make one suspicious of intestinal infection in mature animals are: poor condition and coat; abdominal pains manifested by crying in the night; bad disposition; restlessness; blindness without ocular lesions; fits; and other nervous disorders. A history should always include specific questions about the condi-

Presented before the Section on Small Animals, Eighty-fifth Annual Meeting, American Veterinary Medical Association, San Francisco, Calif., Aug. 16-19, 1948.

[1]Craige, John E.: Proteus Group Organisms Infecting Dogs. J.A.V.M.A., *113*, (1948): 154-156.

[2]Craige, John E.: Spirochetes Associated with Dysentery in Dogs. J.A.V.M.A., *113*, (1948): 247-249.

[3]Craige, John E.: Differential Diagnosis and Specific Therapy of Dysenteries in Dogs. J.A.V.M.A., *113*, (1948): 343-347.

tion of the stools. In many of the chronic cases, the owner will admit that the dog has been subject to diarrhea whenever the diet has been changed or he has gotten his feet wet. On the other hand, one must not attach too much significance to a negative statement from the owner, since many do not observe their animal's feces and others do not recognize abnormal feces. It is advisable to hospitalize patients and observe the bowel movements, bearing in mind that they may not always be abnormal even when the dog is actually infected.

Most of the obscure symptoms disappear when the animal has been cured of the intestinal infection. A similar situation exists in Giardia infections in human adults. The patient usually does not have much intestinal distress but complains of lassitude, general absence of feeling of well-being, and bad disposition. Treatment with atabrine results in improvement almost as spectacular as the turning on of a light. This observation supports the theory that the intestinal infections can cause bizarre symptoms and suggests the pathogenesis.

A large percentage of chronically infected dogs present a history of severe dysentery at some periods of life, usually in puppyhood. This may have been treated with bismuth, kaolin, or some other standard treatment to check the diarrhea, with some success. Apparently, the intestinal tract was soothed and healed by this treatment but the organisms were not destroyed, resulting in the chronic conditions described above. We use only the specific treatments described below whenever we are able to make a differential diagnosis. The bowel movements become normal as soon as the organisms are overcome, without the use of any astringents or other nonspecific treatment.

Three simple tests are employed routinely to determine the presence of enteric pathogens. With a little experience, these tests can be completed in less than ten minutes. The technique is not difficult to master and no expensive equipment, except a good microscope, is required. First, a direct microscopic examination is made from the feces on the thermometer (a little practice will show the correct concentration to demonstrate the organisms). This is examined under high, dry power with the illumination adjusted so that the microörganisms can be seen readily. Coccidia, Giardia, and spirochetes can be seen in this preparation. For Proteus organisms and other enteric bacteria, such as Salmonella, a sterile cotton swab is inserted into the rectum and smeared on the surface of an SS agar plate. The plate is incubated twelve to twenty-four hours at 37 C. and examined. Enteric organisms develop white colonies on this agar and other organisms are inhibited. The Proteus colonies can be identified practically, but not absolutely, by a characteristic black sheen. If treatment for Proteus is not successful, there is a possibility of Salmonella infection, and the culture should be sent to a competent laboratory for identification. To complete the test, it is advisable to do a flotation on the feces for parasite ova and coccidial oöcysts.

The only unusual things about these tests are the use of high, dry power in study of the fecal smear, and the rectal culture on SS agar. These tests are all practical and can be conducted in any hospital owning a microscope. To incubate the plates after inoculation, we use a metal box heated with an electric light and controlled by a diaphragm thermostat, total cost of which is about $6.

TREATMENT

Streptomycin is specific in the treatment of Proteus infections, especially the acute dysenteries. Since it is relatively stable and is not absorbed from the intestinal tract, it can be administered orally at infrequent intervals and still remain effective. The most spectacular results are seen in cases of acute diarrhea of short duration. Frequently, the bowel movements become normal after the first dose of streptomycin. In chronic cases, the streptomycin is usually helpful in checking the diarrhea but does not always effect permanent cures. It has been found necessary in some of these cases to prepare and administer autogenous bacterins for permanent results. Details of dosage and administration are included in the published reports.[1] We have now observed cases in which the effectiveness of the streptomycin diminished after several attacks of diarrhea, suggesting that the organisms became resistant to this antibiotic agent.

Intestinal spirochetes have been treated most satisfactorily by using intestinal sulfonamide drugs (such as sulfathalidine) alone in the milder cases and combined with parenteral injections of penicillin in the more acute or the chronic cases. Jungherr demonstrated that they invade the mucosa of the intestines and the Lieberkühn glands, making it difficult for any medicine to reach them. It is frequently necessary to give several series of treatments at one- or two-week intervals before the chronic cases are cured.

Dogs with Giardia infection respond

to treatment with atabrine as satisfactorily as do human beings. Comparatively large doses are given (50 to 100 mg. twice daily), but they are continued for only two or three days. The Giardia disappear from the feces almost overnight and, in uncomplicated cases, the stools are formed within forty-eight hours. Recurrences have been observed in several cases in about a week, so the atabrine is repeated for two or three days after a waiting period of three or four days. In some chronic cases, it has been necessary to give as many as three courses before the feces became permanently negative. No toxic symptoms have been observed from using atabrine in this way, even for 5- or 6-week-old puppies; but it occasionally causes vomiting when administered on an empty stomach, and sometimes a yellow color appears in the skin and conjunctiva, which must be explained to the client but which disappears within a few days.

The weak spot in our treatment of intestinal infections is coccidiosis. Sometimes the animals respond to intestinal sulfonamide drugs, but we have had much better results by combining them with atabrine, sulfocarbolates, tannin-yeast, iodine preparations, etc. Still too large a percentage of cases refuse to respond to massive doses of these drugs and have to be destroyed. It is hoped that the research being conducted on coccidiosis of poultry will develop a more satisfactory treatment for dogs.

We have not had enough experience with salmonellosis to recommend any treatment for this condition. Intestinal sulfonamides apparently have some value in some cases, and *in vitro* studies have shown that streptomycin inhibits some, but not all, strains. Autogenous bacterin may also prove helpful.

Because of the prevalence of intestinal infections among apparently healthy dogs, the control and prevention of these diseases presents very difficult problems. The breeder attempting to raise dogs for profit is faced with a dilemma if any of these infections become established in his kennels. If he ignores the condition, as many of them do, he must constantly face dissatisfied customers who buy sick dogs and must take a loss from practically every litter. On the other hand, the expense of constant checking and treating that is necessary, especially for dogs going to shows and other dog gatherings, is often more than can be spared from the modest income. The best and most economical way to handle the problem is to test and treat all dogs in the kennels and to continue to test and treat whenever there is any evidence of intestinal disorders. If the breeder cannot afford to clear up the condition, the bitches should be tested before whelping and the puppies kept isolated from the older dogs and tested and treated at the first sign of diarrhea.

It is obviously impossible to test and treat every dog coming into kennels for boarding, yet every one may be a carrier of infection or a susceptible dog that will become infected from exposure to other dogs. To prevent such infection, it is necessary to exercise the strictest segregation and sanitation, sterilizing all runs and kennels between dogs. Probably, the most important source of infection is direct contact due to the peculiar greeting habits of dogs. The owner of a healthy puppy should be advised, even at the risk of insulting his friends, to treat the puppy as a pariah and not let it associate with other dogs.

Sometimes, practitioners doubt the value of specific diagnoses and consider them of only academic interest since they are going to treat the disease the same way no matter what the cause. There are several very practical reasons to make differential diagnoses of intestinal infections. They enable the practitioner to give accurate prognoses as to outcome, time, and even approximate expense. They make it possible to follow the results of treatment and determine whether recurrences of diarrhea are resulting from relapses of the original infection or infection from other sources. Only by testing is it possible to detect and cure chronically infected cases and carriers, which of course is an important preventive measure.

This study makes no pretense of being the final answer to intestinal disorders in dogs. In fact, we have found trichomonads and three other spirochetes that all seem capable of causing diarrhea. There are many facets of this problem that would make productive research projects. The fact that even this much has been discovered, considering the inadequate facilities for research, points up the failure of any of our established institutions to conduct any serious research on dog and cat diseases. The small animal practitioner should realize that his patients have little economic value and, therefore, will not receive much attention from government supported institutions. It is up to the dog-owning public to pay for, and the small animal practitioners to direct and conduct, adequate research in this long-neglected field.

DISCUSSION

CHAIRMAN JONES: Dr. Craige will answer as many questions as we have time for.

DR. JOHN R. GORHAM (Pullman, Wash.): We

became interested in looking for Salmonella carriers in dogs, since Dr. A. H. Wolff in Detroit found so many Salmonella carriers in his investigation.

In a series of 100 dogs, we have found no Salmonella spp., but we have found species of Proteus in every dog. From these findings we believe that Proteus is a part of the normal intestinal flora of dogs.

In a series of 50 mink, we have also found various species of Proteus. These findings were based on the urease activity test. Admittedly, a few of the paracolons could have been urease positive.

We have found that Proteus spp. are isolated in cases of diarrhea and other intestinal disturbances in dogs. But we have also found them in the feces of normal dogs that have come into the clinic for the removal of fox tails or to be spayed. But there may be a problem, in some instances, in that some of these Proteus spp. may have increased in numbers enough to show their pathogenic effect.

Species of Proteus may be injected intraperitoneally into mice and will kill them rapidly. To test *per os* exposure, we have fed carnivorous animals (fox, dog, and mink) cultures of Proteus with no detrimental effect, but we have also fed these same animals species of Salmonella and have only established carriers.

So, just because we have found Proteus spp. in all dogs cultured for Salmonella, it does not necessarily mean that Dr. Craige's work is not valid.

CHAIRMAN JONES: If there are no further comments, I wish to thank Dr. Craige for his enlightening presentation.

Electronic Pocket Stethoscope

The acceptance of a pocket-size electronic stethoscope by the Council of Physical Medicine of the American Medical Association (*J. Am. M. A.*, Apr. 8, 1949) comes as a reminder that veterinarians do not see eye to eye with physicians on the matter of aids to hearing in their diagnostic work. Useful as they may or may not be in our field, the fact remains that veterinary clinicians do not use stethoscopes and pleximeters routinely. Anyhow, whipping the trusty stethoscope from the coat pocket on approaching the ailing animal is not a very common gesture. There may be ample reasons for the difference between the ways of the physician and veterinarian in this respect, but these are for the doctors, not the reporters, to explain.

—Courtesy J. Am. M. A.

Pocket-size electronic stethoscope.

The pocket electronic stethoscope is manufactured by the American Medical Instrument and Supply Company of Chicago. It amplifies sounds picked up in auscultation. The instrument is 5½ in. long, 2 in. in diameter, and weighs 8 oz. Electric power is provided by a mercury type A battery. Its assistance to the hard-of-hearing physician is singled out as a praiseworthy advantage.

Low Level Phenothiazine Treatment of Equine Strongylosis

Kentucky experiments on low level phenothiazine treatment of equine strongylosis are attracting widespread attention of owners and veterinarians (*The Blood-Horse*, March 5, 1949; *Vet. Med.*, March, 1949). Drs. A. C. Todd, W. W. Dimock and others at the Kentucky station in Lexington, working with private practitioners and local horse owners, have obtained good results by feeding a 2-Gm. daily dose, and interspersing each twenty-one days of treatment with a ten-day rest period.

In three years of tests on over 500 horses, anthelmintic action was high with no evidence of harmful effect; the incidence of sickness associated with parasitism was low; and general health of the hosts was above average. A significant advantage of the treatment, as established in these tests, is that it not only kills strongyles and other small nematodes, but also it renders many of the eggs infertile. The drug is mixed with a palatable vehicle (such as equal parts of steamed bone meal and distillers' dried solubles) and added to the feed.

Pending further trials, in which they hope to learn more about the life history and habits of *Strongylus vulgaris*, the investigators are making no claims of all-purpose efficiency or absolute safety for the treatment, and they do not project it as a substitute for good sanitation and competent management. But they do say that "if preventive measures are instituted to reduce the perpetuation, the source, and the intake of infective strongyle larvae and these measures are supported by the regular and systematic feeding of the 2-Gm. daily dose, the results will be noticeable shortly." A full therapeutic dose of phenothiazine is recommended for new additions. An alternative is two weeks on the low level dosage, in quarantine.

Idiopathic Hemoglobinuria in Cattle

WM. J. PISTOR, B.S.A., D.V.M., and B. P. CARDON, Ph.D.

Tucson, Arizona

THE EXTENSIVE cattle feeding operations on irrigated farms, involving more than 200,000 head of cattle yearly, prompted investigations and studies of death losses incidental to this industry. Although many problems have arisen, of major importance is a disease characterized by hemoglobinuria. The investigations conducted by H. C. Smith[3] in Oklahoma in 1943 suggested idiopathic hemoglobinuria as a descriptive name for this disease. Losses among cattle range from 1 per cent to as high as 20 per cent in one herd of 3,500 pastured cattle. Average losses have been approximately 5 per cent. The cattle affected vary in age from 6 months to old cows and bulls, and are shipped into the valleys from the range areas of Arizona, New Mexico, and west Texas. The pastures are green alfalfa, barley, oats, bermuda grass, and mixtures of these. Other types of pasture, including stubble fields, cotton stalks, and harvested sorghums, are used, but losses occur on green pastures. These pastures are usually well drained and dry before the animals graze on them. The water supply is from irrigation ditches or from large earthen tanks.

The management practices are much the same on all ranches. The cattle are left on the pastures day and night and are moved so that they are always supplied with sufficient feed, and so that the pastured areas can be irrigated. Salt is supplied in blocks or is given as a mixture of salt and bone meal *ad libitum*.

SYMPTOMS OF IDIOPATHIC HEMOGLOBINURIA

Symptoms of hemoglobinuria occur in cattle after they have been on these green pastures for two weeks or longer. The history is similar to the grass tetany complex, since the cattle are moved from either dry range feeds or other dry feed onto these green, rapidly growing, pastures.

The symptoms of idiopathic hemoglobinuria are common to most hemoglobinuria conditions described in the literature.[1-3] At the onset, the animal appears depressed. There is a rise in temperature to 103 to 105 F., which falls to, or below, normal as the symptoms progress. The breathing is shallow and rapid. There is a lack of appetite and the animal stands away from the herd. The urine is dark red and urinations are frequent. The bowel movements are scanty and hard. As the disease progresses, the visible membranes become icteric, the animal becomes weak and frequently falls. The feces are covered with an icteric mucus that may be bloody. Although the symptoms are uniform, the course varies depending, probably, on the rapidity of the hemolysis. There are some spontaneous recoveries but the mortality may be more than 90 per cent in animals showing symptoms. The average course is about twenty-four hours, with some animals dying within six hours after the first symptoms are noticed and others living for seventy-two hours. These symptoms are intensified if animals are moved, because of the increased oxygen requirements. Animals die struggling for breath.

TABLE I—Typical Blood Changes in a cow with Idiopathic Hemoglobinuria when placed on Dry Feed.

Symptoms noted	Hemoglobin Gm./100 cc.	Red blood count (%)	White blood count (per. cc.)
1st day	7.5	32.1	9,500
3rd day	4.0	16.2	19,500
6th day	4.5	18.3	14,700
12th day	9.6	42.0	10,100

POSTMORTEM EXAMINATION

The macroscopic tissue changes are usually dependent on the amount and rapidity of hemolysis. In general, the carcass appears icteric. The abdominal and thoracic cavities contain bloody fluid. The pleura and peritoneum usually have extensive hemorrhages varying in size from petechia to large confluent areas. The lungs are slightly congested and icteric. There is an icteric, catarrhal inflammation of the intestines, and the abdominal lymph nodes are congested. There is usually an inflammation of the abomasum. Internal parasites are uncommon. The kidneys are congested and numerous brown spots cover the cortex. The bladder is normal except for the presence of bloody urine. The liver appears normal externally but on section shows some congestion, and much bile exudes from the vessels. In no case are ne-

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crotic infarcts common to bacillary hemoglobinuria.[12] The gall bladder is distended and filled with dark granular bile.

Histopathologic studies of sections prepared from the liver, spleen, and kidney show typical changes brought about by severe hemolysis. The gaseous exchange in the tissues is interfered with by hemolysis and the destroyed red cells and hemoglobin act as irritants causing damage to the various organs, or they may block the capillaries to produce necrosis in the lobules of the liver or tubules of the kidney.

Liver sections show necrotic areas surrounding the central veins. These areas are generally well defined with occasional infiltrations in the surrounding tissue of the lobule. The small capillaries surrounding the necrotic spots are congested with bile. The sinusoids are distended with debris. Several sections stained with Levaditi's silver nitrate stain showed numerous dark coccoid- or spherical-shaped bodies in the interstitial tissue suggestive of Leptospira but this was not definitely established. Stained sections did not show any organisms.[12]

Sections from the kidney show congestion around the tubules with degeneration and necrosis of the epithelium. The tubules and capsules are congested with debris consisting of hemoglobin and albumin casts. Silver-stained sections frequently show the coccoid-formed bodies also found in the liver but no definite Leptospira. In a recent outbreak, material was sent to Dr. K. F. Meyer of the Hooper Foundation. His sections definitely showed Leptospira surrounding the tubules.

Sections of the spleen show congestion and hemosiderin deposits in the pulp.

Blood studies made during the course of the disease show a rapid hemolysis. The red blood count at the beginning of symtoms is usually between 4 and 5 million. This count decreases in fatal cases to a low of 2 to 3 million. Counts are difficult to make because of clumping of the cells. Blood smears show irregularly shaped red cells with stipple or granular degenerative cells frequently seen in anemia, but no hematozoan parasites were found. The white blood count increased during the same period from an average of 9,000 to 20,000. Hemoglobin values usually go to a low of 4 Gm./100 cc. The red blood cell volume falls to from 16.2 to 18.2 per cent. The urea in the serum varies between 23 mg./100 cc. to 42 mg./100 cc. Inorganic phosphorus and calcium usually stay within the normal ranges with the phosphorus varying from 4.6 to 7.2 mg./100 cc., while calcium varies from 10 to 12 mg./100 cc. Magnesium changes are uncommon; the amounts remain between 2.3 to 4.0 mg./100 cc.

Examination of the urine shows only hemoglobin, and in no case are blood cells present. Cystitis is not observed.

CONTROL OF IDIOPATHIC HEMOGLOBINURIA

Because of the economic value of beef animals and the 5 per cent death losses, many efforts of control were undertaken by practicing veterinarians and stockmen, with varied results. Early in the investigations, it was noted that a large percentage of the sick animals brought to the University of Arizona for study usually recovered after several days. The feed given these animals was always dry hay, since it was impossible to put them on pasture. Some changes in the blood picture of a typical case are listed in table 1. After twelve days, the animal continued to recover and was sent home.

TABLE 2—Dosage of Molybdenum given to Experimental Goat

Time	Ave. Amt. of Mo daily (mg.)
First 25 days	10
Next 27 days	20
Next 12 days	50
Next 45 days	100

These spontaneous recoveries suggested the use of dry hay as a means of control, and this is general practice in Arizona today. In most outbreaks, losses stop after the first days on dry feed. Usually these animals can again be placed on pasture with no recurrent losses, if the change is made gradually. Supplementary dry feeding on pasture has also cut down the number of outbreaks.

Attempts to diagnose the cause of idiopathic hemoglobinuria included a variety of studies. The over-all picture suggested an infection by microörganisms, although the disease cropped up under many environmental conditions.

Anaërobic and aërobic cultures of liver, heart, spleen, kidney, blood, and intestine, at all periods of the infection, were not conclusive. Inoculations using laboratory animals and calves were combined with these cultural studies, but in no case were significant reactions produced. Direct inoculations of blood and tissue extracts were also made with insignificant results.

Calcium, phosphorus, and magnesium blood studies were conducted in selected herds during pasture periods and before they were moved to the irrigated valleys. The blood values of these minerals, as reported earlier, stayed within normal ranges. Forage studies were made to investigate plant hemolysins and also to determine the

general nutritive analysis of the pastures. The results of these studies did not give any leads.

The possibility of molybdenum poisoning was considered, and forage samples were collected from fields that had infected herds. In 1 case, animals had been on bermuda grass pasture only, and forage samples had from 0.8 to 1.0 part per million of molybdenum. Pastures of alfalfa had from 3.1 p.p.m. to 9.2 p.p.m., oats 0.1 p.p.m., barley 2.0 p.p.m., and sour clover 9.0 to 14.0 p.p.m. While these clover values are within the toxic range, as shown by the studies of Britton and Goss,[4] sour clover was never prevalent in fields in which symptoms were found.

An attempt was made to produce the anemia by injection of molybdenum directly into the blood stream. A 75-lb. goat was used. Injections were made twice weekly using sodium molybdate. Dosage is shown in table 2.

There was no change in the blood picture during this period and no symptoms of hemoglobinuria or molybdenum poisoning were produced in the goat.

In several animals, the pathologic findings were similar to cases of suspected leptospirosis reported in the literature.[5-7] Because of these similarities and because of the definite diagnosis made by Dr. Meyer, extensive agglutination studies were made of several herds. In one instance, 50 blood samples were obtained from a herd which had suffered a 5 per cent loss from hemoglobinuria three months previously. *Leptospira icterohemorrhagiae*, *Leptospira canicola*, and a bovine strain obtained from Dr. Bernkopf[8] were used. All 50 serums were negative against all three strains. In fact, a positive serum has not been found. Consequently, we are forced to conclude that Leptospira is not the causative agent or, if so, it is a strain which is not cross agglutinated by the three used.

Our studies have not as yet established the diagnosis of idiopathic hemoglobinuria. It is possible that more than one factor must be present to develop the blood hemolysis. Although the correction of so large a percentage of cases by changing the feed suggests enterotoxemia,[9-11] we have been unable to substantiate it. It is our opinion that the type of idiopathic hemoglobinuria found in the irrigated valleys of Arizona is different from those reported in the literature, because of the results of our studies to date.

SUMMARY

1) Idiopathic hemoglobinuria, as it occurs in Arizona pastures, presents the similar group of symptoms and lesions as reported in other hemoglobinurias. These are, in general, due to hemolysis and changes caused by the elimination of the debris of hemolysis.

2) Correction of symptoms has been obtained in most outbreaks by changing animals from pasture to dry feed.

3) Aërobic and anaërobic cultural studies and animal inoculations were negative.

4) Calcium and phosphorus blood studies were insignificant.

5) Toxic plants that might contain hemolysis were not found.

6) Feed analyses were of no value.

7) Molybdenum studies although not extensive showed forage to contain nontoxic amounts.

8) Leptospira infections were suspected early and were definitely diagnosed in one outbreak. Subsequent studies have not substantiated this diagnosis.

9) A definite diagnosis has not been reached.

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Effect of Interrupted Phenothiazine-Salt Treatment.—The phenothiazine-salt treatment for internal parasites is effective only when used without interruption (*California Wool Grower*, Jan. 4, 1949). Sheep that had been fed this mixture free choice for five years were given salt without the drug as an experiment. Four months later, stomach worm infection was prevalent in the flock. Resumption of the free-choice treatment was ineffective without preliminary drenching.

Veterinarians and/or Lay Technicians in Brucellosis Control

S. D. MERRILL, V.M.D.

Augusta, Maine

THE MARCH, 1949, JOURNAL (p. 176) lists Maine as being one of four states to request and employ lay technicians for participation in its brucellosis-control program.

Seeing this listed in the JOURNAL does not look well to me or my colleagues in this state. You in your state would, or will, not like to see it. Our belief is that veterinarians in the other 44 states will be somewhat irked in noting that Maine was among those to "leave the fold." Words of explanation for this move and the conditions attached are in order. For those who would criticize Maine, I would agree that we have made mistakes here and perhaps will make some more. I would also say that we are not alone in this regard, and from our vantage point in the northeast corner of the United States it looks as if other states are making errors of one sort or another. States are run by human beings.

At the outset, I must say that the fact that four states have gone so far in the employment of lay persons sets a precedent. We all regret it. However, such precedent is no proof of the need or necessity for the move in other states. Each state must consider its own situation.

SURVEY OF VETERINARY PERSONNEL URGED

The use of lay persons or veterinarians is decided by only one factor—manpower. I distinctly urge that the officials of every state veterinary medical association immediately start a survey of its veterinary personnel. This should be conducted by the association, or by the state livestock sanitary officials if so desired. The association should, at least, supervise such a survey and should allocate expense money and remuneration to the person or member of the association conducting such a survey. This will insure that the investigation will be conducted in as quick and thorough a manner as possible.

First, you must know the amount of work to be done in tuberculosis, brucellosis, and other disease control in your state. This entails the assumption or definition of some policies. You must know the cattle population by counties and preferably by towns. You need to determine how often the cattle are to be tested for tuberculosis. Your brucellosis-control program must be crystallized so that you may determine the frequency and amount of testing, vaccinating, and supervising of infected herds. In many states, the financial appropriation will be a limiting factor.

Having this material at hand, you need to determine the number and locations of veterinarians available to do the work and arbitrarily assign the work, so that it may be completed according to the policies previously outlined. The next point is important: You must contact each veterinarian to determine whether or not he can perform the assignment arbitrarily allotted. He must be given reasonable assurance that this work will be allocated so that he will have a similar amount each year. This is so each man may plan the testing to be performed at the most advantageous times for him and owners, and to employ assistants if needed. If some veterinarians cannot carry out all the work as arbitrarily designated, re-assignments must be made. If re-assignments do not suffice to insure adequate coverage, this represents the net lack of veterinary manpower.

There are two remedies for a net lack of veterinary manpower: (1) Remodel the policies and required performance of disease-control activities to fit within the veterinary manpower; or (2) secure additional manpower—either veterinarians or laymen.

This survey may seem ponderous but I am sure you will find it worth the trouble. In it is the answer to many questions which are certain to arise. After it is completed, the veterinary position can be stated with assurance.

All are entitled to know that we did not do this in the State of Maine but are now belatedly attempting it—after lay technicians have been authorized.

EMPLOYMENT OF LAY PERSONNEL

In explanation of the report in the JOURNAL that lay persons are being used in the State of Maine, let me state that only one is employed so far. He is in the testing laboratory and does the official work only when the federal veterinarian-in-charge is not in headquarters and performing this additional duty. Contrary to the report, the assignment of this man was not cleared with the Maine Veterinary Medical Association or its officials, but subsequent action of the Association would probably uphold it.

To my understanding, the federal and

Maine statutes do not permit the payment of indemnities when the blood from reactor cattle is drawn by other than authorized veterinarians. Both of these governments are in the process of amending their statutes so this may be done.

In all the various committee meetings, discussions, and in the regular session of the Maine Veterinary Medical Association in January, 1949, when the employment of such lay persons was considered, the veterinarians *understood* that:

1) Lay technicians would be nonresidents of the State of Maine (sent in from outside the state).

2) They would arrive already trained for their part in the program, or at least partially instructed, and would be federal employees under federal supervision.

3) They would be employed *only* for drawing blood samples on an area basis.

4) They would be replaced by federal veterinarians as soon as possible.

5) They would be transferred out of the state when such area testing was completed.

6) Local practitioners, state and federal veterinarians would handle reactor herds following such area testing.

7) Lay technicians would not be authorized to discuss brucellosis problems with cattle owners, this being a definite and valuable veterinary service.

8) Differences of opinion exist between some veterinarians, officials, and influential advisors, as to whether or not our veterinary force is large enough in this state to complete such area work.

9) State funds are not sufficient at this time to pay local veterinarians the amount necessary to adequately carry on the area testing.

10) An unexpended surplus of a federal appropriation of about $34,000 in this state can be utilized by employment of laymen or *per diem* pay of local veterinarians.

11) It has not been determined that local veterinarians can be paid on a fee basis (rather than *per diem*) from federal funds.

12) There seemed to be no volunteers among practicing veterinarians to accept *per diem* pay from federal funds.

MAINE VMA EXPRESSES VIEWS TO STATE DEPARTMENT OF AGRICULTURE

The Maine Veterinary Medical Association instructed one of its members to express the views of the Association to the State Department of Agriculture. This report, in effect, was as follows:

> The Maine Veterinary Medical Association has agreed to accept the policy of employing federal lay technicians (as long as this is the only way to use the federal funds) on area bleeding only, under veterinary supervision, to be replaced by veterinarians as soon as possible, so long as these services are needed.

However, when the chief of the Division of Animal Industry (Maine) requested lay technicians according to item No. 1, the U. S. Bureau of Animal Industry informed the Division that they did not feel such a procedure would be feasible under the circumstances and that if technicians are employed it will, in all probability, be necessary to secure them locally. Such employment was authorized by the federal BAI (under federal employment, pay, and requirements).

As you can see by the foregoing, such stipulation has not been cleared by the Maine Veterinary Medical Association. Such facts have been submitted to the chief of the Bureau and a reply received consistent with the preceding paragraph.

CONCLUSION

My final word to the veterinarians of each state: Know the ground on which you wish to stand and prepare it.

Remember that these disease-control programs are not set up for the benefit of the veterinarian but for the protection of the health of our livestock and people. Remember, too, that officials in charge of the programs have others besides ourselves "breathing down their necks." We must remember that ours is not the last word in these problems. We can show the way (if we will), but we still remain subservient to the livestock industry and the people.

Notes on Coccidiosis*

Chicks surviving high initial doses of sporulated oöcysts of *Eimeria tenella* are usually more resistant to further infections than those receiving low initial doses. . . . The intake of sporulated oöcysts is controlled by temperature and moisture.—*C. Horton Smith, England.* . . . The time that oöcysts (*E. tenella, E. acervulina, E. maxima*) survive in the droppings on the soil is influenced by sunlight, shade, and vegetation. Direct sun on bare ground shortens the time. All three remained infective under all conditions tested for at least twelve weeks, and the longest time that viable oöcysts were recovered was eleven months for *E. tenella,* nine months for *Eimeria maxima,* and twenty months for *Eimeria acervulina.*—*M. M. Farr and*

*Notes from Conference on Coccidiosis, Section of Biology, New York Academy of Sciences, March 4-5, 1949.

E. Wehr, Beltsville, Md. . . .The optimum conditions for tests of acquired immunity, particularly those following drug treatment, may require more precise formulation. Major sources of error are the prolongation of the normal course of infection due to drug treatment, the persistence of cecal cores which may hinder reinfection mechanically, and failure of cecums to return to normal condition promptly.—*E. Waletzky and C. O. Hughes, Connecticut.*

EXPERIMENTAL TREATMENT

Failure to diagnose and initiate treatment of cecal coccidiosis during the early stages of infection make it worthwhile to consider the administration of prophylactic or suppressive drugs.—*J. E. Johnson, D. R. Mussell, and A. J. Dietzler, Michigan.* . . . No new drug can be shipped legally in interstate commerce unless an application filed with the administrator of the Federal Security Agency is effective to it. Efficacy can be determined on a four-pen test: (1) Birds receive a standardized infection without drug; (2) birds receive the same infection as others, plus the drug; (3) birds receive drug, but no infection; (4) birds receive no drug and no infection. All authors are urged to use judicious terminology in publishing the results of their experiments.—*J. H. Collins, Washington, D. C.*

SULFONAMIDES

Of 36 agents tested for activity against cecal coccidiosis in chicks artificially inoculated, seven (sulfamethazine, sulfamerazine, sulfaguanidine, chlorosulfadiazine, sulfaquinoxaline, sulfapyrazine, and nitrophenide) were found to be highly effective. Preventive action was exerted by three (N-1 benzoysulfanilamide, sulfanilylamidophenyl-arsonoxide, and "SX"), while all others (including many favorite treatments of broiler growers and commercially promoted products) were slightly effective or entirely ineffective.—*K. C. Seeger, Delaware.* . . . Of ten agents tested for effectiveness against *E. meleagridis* in turkeys, only sodium 4-chlorophenylarsonate appeared to be sufficiently effective at relatively nontoxic concentrations for further consideration.—*N. F. Morehouse, Iowa.* . . . Sulfaquinoxaline appears to be effective against all stages in the life cycle of *E. tenella* and is effective when given as late as four days after laboratory inoculation. It did not delay development of resistance.—*L. C. Grumbles and B. A. Tower, Louisiana.* . . . Continuous medication from first day on with "claimed" 0.01 per cent sulfaquinoxaline mash provided practical control of cecal and intestinal coccidiosis under average Connecticut conditions.—*E. L. Jungherr and J. D. Winn, Connecticut.*

OTHER TREATMENTS

Nitrophenide has a marked therapeutic effect when treatment is begun two to three days after inoculation and is continued for two to seven days. It has little or no effect if used only during the first two or three days following oöcyst ingestion.—*E. Waletzky and C. O. Hughes, Connecticut.* . . . One bisphenol (K6606) controlled single and repeated infections when fed in mash (0.2%) and was well tolerated. Treated birds developed measureable immunity. The flavor of the meat was not influenced by treatment.—*Johnson, et al., Michigan.*

Borax alone, or in combination with urea, provided little or no protection against cecal coccidiosis and did retard growth.—*E. E. Wehr, M. M. Farr, and J. H. Gardiner, Beltsville, Md.* . . . Nitrofurazone, although effective against *E. tenella* in extremely small doses, is not effective if administered three days after infection, and gains are lower than with similarly effective doses of sulfaquinoxaline.—*P. D. Harwood and D. I. Stunz, Ohio.*

EFFECT OF LITTER

Losses from cecal coccidiosis were consistently greater in groups bedded with high moisture litter.—*A. E. Tomhave, Delaware.* . . . Chicks raised on old, built-up floor litter gained 6 per cent more than those on fresh litter. It is assumed that the built-up litter was a source of nutritional factors, as well as a factor in reducing losses from coccidiosis and other causes.—*D. C. Kennard and V. D. Chamberlin, Ohio.*

LAMBS AND CALVES

Ewes have a marked resistance to coccidiosis, as compared with lambs. It was not determined whether this was an age or an acquired immunity. Succeeding lambs discharge oöcysts at increasingly higher peaks, suggesting that ewes are carriers, and that the first lambs to be infected are multipliers. The peak is reached at the third to fifth week.—*J. S. Dunlap and P. A. Hawkins, Michigan.* . . . Of 51 calves infected experimentally with *Eimeria zurnii*, 27 were treated with sulfamethazine and 24 held as controls. Treatment immediately after inoculation was less effective than similar treatment begun a week later, and repeated courses gave even better results—as much as 50 per cent more gains than the controls. One course of treatment lasted four successive days.—*L. R. Davis and G. W. Bowman, Alabama.*

Sodium Fluoroacetate (Compound 1080) Poisoning in Cattle

This is a report of losses apparently due to a new product, about which little information is available concerning its toxicity in farm animals. The following observations in cattle are similar to those reported in sheep.[1]

Anamnesis.—Three cattle in a herd of 4 died within a 24-hour period. The lots were thoroughly searched for any incriminating material, especially paint. The confines were clear of rubbish and only several acres in extent, thus making a complete search relatively conclusive. A week after the losses, it was learned that 1080 had been used for rodent control on a chicken manure stack in the pasture twenty-two hours before the first death. Cattle tracks had been noticed about the stack of manure at the time the losses occurred.

Animal 1, a 5-month-old Shorthorn heifer calf, had died shortly before 9 a.m.; no symptoms had been noticed before it was found dead. Autopsy was begun within half an hour. Animal 2, a 4-year-old barren Guernsey heifer, showed some disturbance and died within the next hour. Animal 3, an 8-year-old Jersey cow, seemed slightly depressed and died twenty-four hours later. Animal 4, a 6-year-old Jersey cow, was apparently normal and remained so.

Symptoms.—All animals ate normally the night before, but in the morning, the 3 affected animals refused food. The dead calf was lying near the others. At 9 a.m., the 4-year-old heifer (animal 2) was lying normally but showed disinclination to walk after getting up. Slight quivering of the thigh was noticed. Soon, clonic spasms of the muscles of the head and neck were almost continuous. Small amounts of urine and feces were passed frequently. Several slightly audible moans were emitted. After about a half hour, the animal staggered some 30 paces and fell. A severe convulsion of about two minutes followed. All four legs moved violently while fully extended. One loud, sustained bellow was given, and the animal died. The temperature at this time was 101.5 F.

The affected cow had symptoms similar to the heifer but much less severe. Her symptoms did not seem to have changed noticeably at 8 a.m. the next day. At 9 a.m., she was found dead. Her temperature remained normal throughout. No peculiarities were noticed in respiration or pulse. The fourth animal showed no disturbance, and a 4-day-old calf placed with her two days later has continued to do well. A blood examination for total red, total white, and differential count was made on the affected cow twenty-four hours before death, with no apparent changes from the normal being noted.

Postmortem Examination.—The calf was autopsied within an hour of death. The heart showed epicardial and endocardial hemorrhage, but this was not extensive. The small intestine was extremely hemorrhagic. The rumen was well filled. The dearth of lesions led us to suspect a toxic substance rather than bacterial infection. Ruminal contents were collected from the first and second animals for chemical examination at the laboratory.

Following is the chemical analysis:[*]

1) Tests for lead and mercury were negative.

2) Qualitative tests for organic fluorine were run, using the burner method of Goldman *et al.*[2] The zirconium alizarin reagent[3] was used for detecting the inorganic fluoride formed by combustion. The ruminal contents of the affected calf gave negative results when tested for organic fluorine by the standard procedure. When the ruminal contents of the calf were extracted with a large volume of water and the extract concentrated to a small volume, positive tests for organic fluorine were obtained. A similarly concentrated extract of the ruminal contents of a normal animal gave negative tests for organic fluorine. A sample from the manure pile, taken ten days after application of compound 1080, gave a positive test for organic fluorine without concentration.

The acute symptoms and rapid death are attributed to the organic form of the fluorine in 1080.—*John O. Schnautz, V.M.D., M.S., Department of Veterinary Medicine, Agricultural Experiment Station, Oregon State College, Corvallis, Ore.*

Published as technical paper 577 with the approval of the director of the Oregon Agricultural Experiment Station. Contribution of the Department of Veterinary Medicine, Oregon State College, Corvallis.

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[3]American Public Health Association: Standard Methods for Examination of Water and Sewage. New York City, Am. Public Health Assoc. (1946).

[*]Chemical tests were made by the Department of Agriculture Chemist, O. S. C.

Sulfapyridine in Hog Cholera

Hog cholera presents an acute problem in Jugoslavia (*J. Markovic: Jugoslov. Vet. Glasnik.*, 1947), because curative vaccination to prevent spread of the infection was prohibited. Serum was being produced by some laboratories within the country, and no reason is given for the order. Its promulgation has greatly increased the need for veterinarians.

The author reports the results of treatment of more than 100 cases with sulfapyridine furnished by UNRRA. The drug was administered *per os*, either in the feed or in tablet form. In each instance, the treatment was successful if the disease was in its early stages, much to the surprise of the investigator. He recommends the drug for other infections, also.—V. SKOVAJSA.

Complement-Fixation Test for Leptospirosis

The microagglutination-lysis reaction has several disadvantages which make it difficult to use on a large scale. It requires live culture antigens of several strains, dark field equipment, and many serum dilutions.

For the complement-fixation reaction (M. A. Musaev in *Veterinariya, 25*, Dec., 1948), a polyvalent antigen derived from cultures from several species of animals was found satisfactory. It was prepared by concentrating the organisms in a high speed centrifuge and adding phenol or chinosol. The antigens were titrated with known Leptospira antiserum and normal serum, and the phenol antigen was found to have a working titer of 1:8 to 1:12. The chinosol antigen had a working titer of 1:5 to 1:10. The antigens retained their full activity for thirteen months. The reaction was conducted by the usual method, using ½ to ¼ of the dose of antigen. The test serums were diluted 1:10, 1:50, 1:100, etc. The diagnostic titer was considered to be 1:50.

Serum samples from 2,357 domestic and fur animals were examined by microagglutination-lysis and complement fixation. Of the 1,419 cases suspected of leptospirosis, 662 were positive to complement fixation, and 669 were positive to microagglutination-lysis. The 938 animals which were normal or affected with other diseases were negative to both reactions. The microagglutination-lysis reaction occurred at higher titers. A serum positive to microagglutination at 1:1000 might be positive to complement fixation at 1:100 to 1:400. The ratio between the titers of the two tests was not constant. Nonspecific microagglutination reactions occurred at titers of 1:10 to 1:100. It was concluded that the complement-fixation reaction was a valuable diagnostic method. Further test on 500 serum samples indicated that cultures dehydrated at −20 to −25 C. were satisfactory for the preparation of antigen.—R. E. HABEL.

Combined Action of Antibiotics and Sulfonamides Studied

Recent advances in the chemotherapy of disease have proceeded along two main lines of endeavor — searches for new antibiotic agents and studies exploring the possibility of combining antibiotics with each other or with sulfonamides. These combinations might have three possible results: (1) The effect may be simply additive; (2) it may be synergistic, that is, the mixture would have a greater effect than the sum of the effects of the active ingredients; and (3) the reverse could occur and the mixture have a lesser effect than the sum of the effects of the active constituents. A study of these actions, (*Am. J. Pub. Health, 39*, March, 1949: 340-344) reveals the following: Polymyxen and streptomycin, both highly active against gram-negative bacteria, showed synergistic activity with the largest number of other drugs. Penicillin was next, being synergistic with three other antibiotics. Aureomycin showed synergism with penicillin and polymyxen.

Streptomycin was the only antibiotic which showed any synergistic effect with the sulfonamides tested and was active with sulfadiazine and somewhat less with sulfathiazole. The organism used in all cases was *Salmonella typhosa*, and the degree of synergism observed did not indicate any marked advantage in the use of the combinations over that obtained by increasing the amount of the more active drug. The combination of penicillin and streptomycin was shown to be markedly antagonistic. Although a synergistic action was demonstrated by combinations of the agents tested, only 50 per cent of the *in vitro* results correlate with *in vivo* tests.

Precautions for Streptomycin Handlers.—Wearing rubber gloves and avoiding other direct contact with streptomycin are considered wise precautions for handlers, in view of occasional reports that this drug has caused skin sensitization in hospital personnel, just as penicillin sometimes does.

Formal veterinary education is less than 300 years old.—*W. A. Hagan, D.V.M., Ithaca, N. Y.*

Adenocarcinoma of Nasal Epithelium in Shetland Sheepdog

On Nov. 26, 1947, a large, male Shetland Sheepdog, 8 years old, was presented with the following history and symptoms.

In 1945, 1946, and five weeks prior to presentation, the animal had several teeth extracted. During this two-year period, the dog was alternately depressed and normal for variable periods. After the last extraction, a persistent conjunctivitis of the right eye with a mucopurulent discharge was present. The appetite had failed almost completely.

My first examination revealed a temperature of 103 F., conjunctivitis of the right eye, and bright fresh blood at right external naris. The area from the inner canthus of the right eye to the external naris was swollen and tender to touch. A tentative diagnosis of acute rhinitis, and sinusitis (frontal) with involvement of the nasolacrimal duct was given. Treatment consisted of 10 units of liver extract and B complex intramuscularly, and penicillin ophthalmic ointment.

On Dec. 3, 1947, the animal was reëxamined and appeared practically normal, with full remission of conjunctivitis and nasal discharge. On Jan. 17, 1948, when the animal was returned for examination, bloody discharge was again present at the right naris. Severe depression and anorexia with noisy respirations were present. X-rays were recommended, and made, for diagnostic purposes.

Figure 1 shows a uniform shadow in the right naris and frontal sinuses. The clinical symptoms correlated with the x-ray findings suggested the diagnosis of a malignancy of nasal cavity and frontal sinuses. I advised the owner that euthanasia would become necessary very soon, and three days later the animal was sacrificed.

The autopsy disclosed a very soft, pale pink mass in the right naris and frontal sinuses. The consistency of the tumor was much like brain tissue. Representative portions of the neoplasm and viscera were sent to the Army Institute of Pathology. On March 23, 1948, the following report was received from Col. Raymond O. Dart of the Institute, which confirmed the diagnosis. Major T. C. Jones, V.C., examined and reported on the specimens sent.

> The following microscopic report is submitted in the case of a Shetland Sheepdog, 8 years, male, AIP accession 201940.
>
> *Nasopharynx.*—The sections reveal an adenomatous neoplasm which is attached to the nasal mucosa and which infiltrates the muscularis of the soft palate and invades the turbinates as well as the bones of the frontal sinus. The new growth is usually made up of tall columnar cells which form irregular tubules, but in some areas nests of squamous cells are seen.

Fig. 1—X-ray showing uniform shadow in the right naris and frontal sinuses.

> *Brain.*—No significant lesions are seen in the olfactory bulb, nor are lesions seen in the medulla, pons, or cerebellum.
>
> *Urinary Bladder.*—The epithelium is desquamated but no significant lesions are recognized.
>
> *Adrenals.*—Congestion and recent hemorrhages are noted in the zona fascicularis.
>
> *Spleen.*—The entire spleen is engorged with blood, isolating the splenic corpuscles. These corpuscles contain numerous plasma cells and karyorrhexis is common. The reactive centers are not prominent.
>
> *Kidneys.*—The vessels are engorged with blood, but no other lesions of significance are seen.

Heart.—No significant lesions are recognized.

Lungs.—Congestion is severe. The alveoli are flooded with red cells and many contain neutrophils and macrophages. The consolidated areas appear to be concentrated about the bronchioles.

Liver.—Congestion is particularly severe in some circumscribed areas. The sinusoids are dilated with serum and blood.

Prostate.—No significant lesions are seen.

Diagnosis.—Adenocarcinoma of nasal epithelium.—*Albert M. Berkelhammer, V.M.D., Irvington, N. J.*

A Swine Erysipelas Outbreak in Turkeys

It appears that the first case of erysipelas infection in a turkey was described by Jarosch[1]. Beaudette and Hudson[2] reported the first outbreak in this country. It occurred in a flock of 500 turkeys of which about half survived. Since the report of Beaudette and Hudson, this microörganism has been found in numerous flocks scattered throughout the United States. The outbreak reported here appeared in a flock of 7,665 turkeys in Kentucky, and constitutes the first recorded isolation of *Erysipelothrix rhusiopathiae* from that species of bird in this state.

History of the outbreak showed that a flock of sheep had been pastured on the turkey range three weeks before symptoms of the disease were observed in the turkeys. The onset of the erysipelas was sudden, since the first evidence of its presence was the death of 8 toms in one day. Within the next two days, 4 more toms died. Five turkey hens, showing lesions of blackhead, also died. Bacteriologic examinations of these hens were not made. In the meantime, about 40 per cent of 250 toms located in this group of 3,000 turkeys became sick. In a second group, containing 4,665 birds, about 10 per cent of the toms showed symptoms of the infection. Some of the turkey hens which had ranged with the sheep had been sent to a second farm. On this farm, the infection appeared in a flock of 8,600 birds. Although 6 toms died, few were visibly sick. Deaths from erysipelas infection occurred on the first farm about six days before occurring on the second farm. In all groups, only the toms were noticeably affected. They appeared listless and showed various degrees of weakness. The wing and tail feathers drooped and in some there was diarrhea. In a few cases, the caruncle was cyanotic and swollen.

Turkey toms presented for postmortem examination showed petechial hemorrhages in the air sacs, muscles of the breast, and the various serous membranes, including those of the heart. Hemorrhages occurred in the small intestines and the contents were stained with blood. The liver and spleen were congested, and the latter was markedly enlarged.

Erysipelothrix rhusiopathiae was isolated from the internal organs and tissues of the turkey toms. The microörganism was obtained from toms which came from both farms mentioned above. It was a small, slim gram-positive rod which was nonmotile and grew very delicately on plain agar. A suspension of the growth was agglutinated by swine erysipelas antiserum. It did not produce indol, but did produce hydrogen sulfide and fermented glucose and lactose without gas production. It did not ferment sucrose. When injected intramuscularly into 3 pigeons, this organism caused their deaths in forty-eight and ninety-six (2) hours, respectively. The bacterium was recovered from all 3 pigeons.

Within forty-eight hours of the deaths of the first 8 toms, erysipelas antiserum was given to 1,750 male birds on the two farms and penicillin (Romanowsky formula—300,000 units/cc.*) was administered to 147 visibly sick toms on farm 1. Each tom was given 60,000 units of penicillin daily for four days. Following the penicillin treatment, only 2 toms died. Twenty of the toms on farm 1 treated with antiserum alone died, and on the second farm, where no penicillin was used, 14 antiserum-treated male turkeys died. By the end of the second week from the date of the onset of this infection, the sick toms had recovered and there were no more losses due to erysipelas infection.—*R. G. Brown, D.V.M., E. R. Doll, D.V.M., D. W. Bruner, D.V.M., Ph. D., and Alice S. Kinkaid, B.S., Department of Animal Pathology, Kentucky Agricultural Experiment Station, Lexington, Ky.*

The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by permission of the director.

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*Courtesty of Schenley Laboratories, Inc., New York, N. Y.

The feeding of a mineral supplement rich in magnesium as a preventive of grass tetany has given more success than the treatment of the condition with magnesium injections.—*Vet. Rec., Feb., 1949.*

NUTRITION

Meeting Vitamin A and D Needs*

Twenty-five years ago, a dairyman would never have suspected that a lack of vitamin A or D in rations fed his herd could mean serious financial loss. Today, volumes have been written covering the research conducted and the facts discovered in the field of vitamin nutrition.

VITAMIN A

Slow growth is one of the most pronounced effects noted when a calf ration is deficient in vitamin A and, although it is not as dramatic as some of the physical symptoms such as watery eyes, colds, coughing, and nasal discharge, it is even more important to the farmer's pocketbook.

Night blindness is often used as a practical means for fairly early diagnosis of a developing vitamin A deficiency. In cows, a deficiency frequently results in reproductive failure coupled with poor utilization of feed, poor general health, and many of the physical symptoms described for calves.

For both cows and calves, there is no sharp line of distinction between a thrifty condition and poor health. Borderline deficiency symptoms are less marked and are often difficult to recognize, but they may be cutting into a farmer's profit severely.

Calves at birth have low vitamin A reserves. The calf's first opportunity to supplement its reserves is from colostrum which varies widely in carotene and vitamin A content, depending largely on how the dam was fed. Hay is the next natural source of vitamin A available to the calf. If a combination of low reserves at birth and low intake from colostrum and hay exists, conditions are conducive to the development of vitamin A deficiency. Calf meals commonly include about 3,000 U.S.P. units of true vitamin A per pound.

VITAMIN D

Severe stunting is also one of the serious effects of vitamin D deficiency in calves. Poor utilization of feed and inability to metabolize efficiently the calcium and phosphorus of rations, together with the general lack of vigor and health and consequently greater susceptibility to other diseases, hit where it hurts—the farmer's profits.

The effects of vitamin D deficiency are not limited to young, growing animals. The South Dakota station has shown that mature dairy cows have a fundamental need for vitamin D. Besides the physicial symptoms, which are similar to those recognized in calves, a vitamin D deficiency in dairy cows results in markedly decreased breeding efficiency. Here again, the importance of hard-to-recognize borderline deficiencies should not be underestimated. It has been suggested by some nutritionists that an unrecognized vitamin D deficiency may well be one factor in lowered performance and rapid turn-over in dairy herds.

The minimum vitamin D requirements of calves, based on work at Pennsylvania State College, are 400 to 500 U.S.P. units per 100 lb. of body weight, with improved growth and better general health when 2,000 U.S.P. units per 100 lb. of body weight were fed in addition to the amount contained in a fortified calf starter.

Sunshine can act as a source of vitamin D for livestock but differences in climate, season, locality, and weather conditions, as well as management practices, cause wide variation in the amount received. Furthermore, there is evidence that direct sunshine itself may have previously unrecognized limitations. Roughages provide another source of variable amounts of vitamin D. New information reveals that, contrary to past beliefs, the extent of sunshine exposure of hay in curing is not necessarily a good guide to its vitamin D content. Sun-cured alfalfa hay has been found to vary between 68 and 663 units of vitamin D per pound. An average daily intake of any of these alfalfa hays would not meet the minimum vitamin D requirements of calves at 1 and 2 months of age. None of the alfalfa samples referred to would meet the minimum feeding guide of 12,000 to 15,000 units of vitamin D daily for dairy cows on 15 lb. of hay per day. There is little or no published information available as yet on roughages other than alfalfa hay.

The feeding of irradiated dry yeast to dairy cows for the production of metabolized vitamin D milk benefited the cows as well as improving the milk. Professor Mac Ewan, University of Saskatchewan, makes the following statement: "Deficiencies (of calcium, phosphorus, and vitamin D) may account for more difficulty in dairy herds

*Abstracted from "Meeting Vitamin A and D Needs" by G. C. Wallis in *The Feed Bag*, December, 1948.

than has been realized, and may account in one degree or another for what the dairyman has called 'burnt-out' condition."

The "Little Minerals"

That the formula of a balanced ration for livestock, minerally speaking, has yet to be written can hardly be disputed. Although the functions of iodine, iron, and copper are quite well understood and clinically demonstrable, much remains unknown about the minimum requirement of cobalt, manganese, fluorine, and potassium. As in the case of the key minerals, geography, climate, soil, distribution, and selection are involved in the intake of the trace minerals which vie with the innermost physiological process—to an undetermined extent. Meanwhile, within reason, their empirical use in feed supplements should be encouraged rather than disapproved. The clinic is a great source of chemotherapeutic knowledge.

A new light on copper is its recommended use as a fertilizer of farm crops: tobacco, cotton, potatoes, and soybean, wherein it serves the purpose of a promotor of growth and as a micronutrient of edible products.

Fluorine in Rations

Feeding three levels of fluorine from fused tricalcium phosphate and raw rock phosphate to 6 dairy steers, from shortly after birth to 3½ years of age, did not affect the rate of growth (*J. Dairy Sci., 33,* (March, 1949) : 228-235). The fluorine content of the radial bone and first and third molars indicated a definite increase in fluorine deposits in these tissues, a roughness, discoloration, and abrasion of the teeth increased markedly in the two groups receiving the higher levels of fluorine. It was concluded that fused tricalcium phosphate with 0.24 per cent fluorine is a safe phosphorous supplement if used with discretion. A grain mixture containing 0.02 per cent or more of fluorine was found to be unsafe for feeding dairy cattle.

Nutrition is an important factor in raising dairy calves. This includes a study of total energy intake, the vitamin A content of the ration, and possibly some of the trace minerals. An accurate differential diagnosis is important in each case of illness, so that the proper treatment may be selected from among the wide variety of products and dosages reported by various practitioners.—*E. A. Woelffer, D.V.M., Wisconsin.*

Mammary and Placental Transfer of Vitamin A

Supplementing the prepartum ration with 12,000 I. U. of vitamin A daily, per 100 lb. of body weight, increased the liver stores of vitamin A of the newborn and of the colostrum. Supplementation with 80 mg. of tocopherols per 100 lb. of body weight increased the liver stores of vitamin A in lambs but had little effect on the storage in the kid or pig. In no case did tocopherol affect the vitamin A content of the colostrum of the species studied. Nor did the supplementation of tocopherols in combination with vitamin A affect the storage or the colostrum content.—*J. Anim. Sci., Feb., 1949.*

Quantity and type of fat in the ration may affect the vitamin E requirements of animals.—*Nutr. Rev., Nov., 1948.*

Vitamin B_{12}, the new antipernicious anemia substance, can be obtained from the same species of mold that produces streptomycin.—*Sci. News Letter, Dec. 11, 1948.*

A macrocytic anemia (human), differing but little from Addison's pernicious anemia, has been associated with the fish tapeworm, *Diphllobothrium latum.*—*Nutr. Rev., August, 1948.*

It is probable that gingivitis, an early symptom of pernicious anemia in man, may likewise be associated with some of the anemias seen in dogs, especially puppies. —*N. H. Bastawy, Vet. Rec., July 10, 1948.*

Roughage Digestion in Cattle.—A study of the influence of soybean oil meal on the digestion of corncobs and timothy hay dry matter in steers revealed that it was increased 14 to 17 per cent, respectively. This difference is of practical significance. —*J. Anim. Sci., Feb., 1949.*

The blood of lambs was shown to be deficient in vitamins A and C at birth (*J. Anim. Sci.,* Feb., 1949) but soon reached normal levels following the ingestion of colostrum. Colostrum contained approximately six or seven times as much vitamin A as later milkings. The vitamin C of the plasma decreased for four days after birth before increasing to a normal level, which may be accounted for by the normal vitamin C level of colostrum.

EDITORIAL

Will Drugged Feeds Replace Good Management?

"FIRST AGAIN WITH SULFAQUINOXALINE!" is the boast of a feed company's advertisement which goes on to explain that their feed "is now available with added sulfaquinoxaline to control and prevent outbreaks of cecal and intestinal coccidiosis." Research directed toward disease control, by veterinarians and others, through the mixing of drugs with feeds, is of course not new. In fact, the actual incorporation of drugs into feeds by manufacturers is now a common practice in some areas. But, this advertisement (a full page) is one of the first to appear in a feed magazine with a nation-wide circulation.

Granted that sulfaquinoxaline mixed in feed is an efficient means of preventing losses from coccidiosis, nevertheless, the wholesale mixing of drugs with feed by manufacturers raises some disturbing questions.

Will present meager sanitation and hygienic practices for the control of diseases be relaxed or even discarded? Will poultry producers simply rely on keeping their birds continually drugged by the use of medicated feeds? Will this new concept of disease control cause the producer to become even more careless about his management practices and resign himself to living continually in the presence of disease? Will the chicken raiser be able to feed a ration with drugs added, to birds living in the presence of untold numbers of parasites and bacteria, and still realize a profit? Or, perhaps, will the parasites and bacteria develop a resistance to the drugs as some organisms and insects have to certain drugs and chemicals? What may be the effect on breeding animals kept too long on drugged feeds? Is it logical, then, to assume that drugs will later be added to feeds for other animals, and if so, what will distinguish a feed store from a drug store?

According to Mr. Walter Berger, president of the American Feed Manufacturers' Association, the feed manufacturers regret this development. They "have been forced into mixing drugs with feeds by customer demand and wholesale competition." The additional regulations which govern the distribution of feeds containing drugs are a headache to feed manufacturers.

An official ruling of the Food and Drug Administration requires feeds containing drugs to be classified as drugs. They are then subject to the controls of the Federal Food, Drug and Cosmetic Act. As such, the feed bag labels must emphasize the sulfonamide ingredient on the label and in the name. Also, the indications for its use must be given, the active ingredients must be listed by percentage, the analysis of the feed, and adequate directions for use and warnings, must all be part of the label.

Purchasing drugs by the 100-pound sack will be a new experience for the farmer. It will also be quite a change to have 100-lb. sacks of drugs (drugged feeds) standing in the local drugstore. Druggists will not look with favor upon any development which might deprive them of the "corner" they claim in the animal remedy business and which they have striven mightily to develop during recent years.

Veterinarians will not approve of the sale of drugs in feed. The objections that can be voiced are sound and well founded. However, before we become too vocal in our criticism, we should examine carefully the developments that have led up to the incorporation of drugs in feed.

First of all, did the scientists, including many veterinarians, who carried out the research work which proved that certain diseases can be checked by adding drugs to feed, fail to foresee the final outcome of their research work? Secondly, have veterinarians in practice who have refused to assist the poultry producers with their disease problems added impetus to this new development?

What should the attitude of veterinarians be toward these feed companies, dealers, and their products? Or, for that matter, toward the man who feeds the drugged rations?

The prevention of disease by sanitation, good management, proper immunization, accurate diagnosis, and specific treatment will always be the most economical means of disease control.

As in other cases of this kind, which some will call encroachment, the best offensive for the practicing veterinarian is to render a complete service for all farm species, which includes poultry.

CURRENT LITERATURE

ABSTRACTS

Streptomycin for Treating Septicemias in Foals

Nineteen cases of clinically diagnosed septicemic infection in newborn foals were treated with streptomycin or with streptomycin and penicillin. A dose of 0.5 Gm. of streptomycin every three hours appeared to be adequate for the treatment of cases typical of *Shigella equuli* infection when administered early in the disease.—[*E. R. Doll: The Treatment of Septicemia of Newborn Foals with Streptomycin and Penicillin. Cornell Vet., 39, (1949): 86-96.*]

Record of Rumen Motility

An effective and practical method of recording reticuloruminal movements was devised for use on the intact cow. Rumen movements were conveyed by air pressure to a tambour and recorder through rubber tubing from a plunger held against the flank. Adjustments in the size of the equipment probably would make it practical for use in smaller ruminants. The use of this method will open an entirely new field of study—the pharmacodynamics of the rumen in the intact animal.—[*R. W. Dougherty and Dana Crumb: A New Method for the Graphic Recording of Rumen Motility in the Intact Animal. Cornell Vet., 39, (1949): 3-9.*]

Trichinosis in Norway

Trichinosis was seen in Norway for the first time in 1865, when it was found in pork imported from America. Since that time, it has been seen infrequently. In 1939, trichinosis was found in a fox and during the years 1940 to 1947, a survey was made to determine the distribution of the disease. It was found that about 2.5 per cent of all fox carcasses examined showed evidence of trichinosis and that about 10 to 12 per cent of the fox farms had the disease. From 1940 to 1944, about 10 to 12 per cent of mink carcasses had trichinosis, but it was not found in these animals from 1945 to 1947, indicating that control measures were effective.

Trichinae were demonstrated in 28 of 125 wild foxes, 7 of 41 cats, 33 of 84 rats, and only 2 of 1,295 dogs examined. Only 8 positive results were obtained in examinations of 3,232 human tissues during 1941 to 1946. Serologic tests on blood specimens from 665 fur animals during 1943 to 1946 revealed 23 positive reactions. In 1947, serologic tests on 56 specimens of swine blood gave positive reactions in 5. These were confirmed by microscopic examination.—[*M. Iverson: The Incidence and Control of Trichinosis in Norway. Norsk Vet. tidsskr., 60, (Aug., 1948): 303-309.*]—A.G.K.

Semen Production and Fertility

Semen from one to three ejaculates at one time were collected from three groups of bulls over a period of 216 days, at six-, twelve-, and eighteen-day intervals. Approximately 45 per cent more shippable semen was produced by those bulls which ejaculated at six-day intervals than from those which ejaculated less frequently. From the data, it appears that the six-day interval is not detrimental to spermatogenic activity as judged by the criteria used. The fertility of semen from bulls ejaculating at twelve-day intervals was higher, but the differences were believed to reflect unfortunate groupings of the bulls rather than true treatment effects.—[*Ernest Mercier, R. W. Bratton, and G. W. Salisbury: Semen Production and Fertility of Dairy Bulls as Related to Frequency of Ejaculation. Cornell Vet., 39, (1949): 32-38.*]

Nordisk Veterinaermedicin—A New Veterinary Journal

The national veterinary medical associations of Denmark, Finland, Norway, and Sweden are jointly sponsoring a veterinary journal called *Nordisk Veterinaermedicin*. It has been recognized that the Scandinavian veterinary journals are representative of the best in veterinary medical literature. Important contributions to the fields of clinical practice, the basic sciences, and the academic side of veterinary medicine have appeared in the pages of the journals which will be amalgamated into the new Journal. It is to be expected that the *Nordisk Veterinaermedicin* will bear the same standards of excellence as did the journals which have been discontinued in favor of the new undertaking. The *Finsk Veterinar Tidskrift, Norsk Veterinaer Tidsskrift, Svensk Veterinar Tidskrift,* and the *Skandinavisk Veterinar Tidskrift* will no longer be published.

In Denmark, the *Medlemsblad for den Dansk Dyrlaegeforening* will continue to be published by the Danish Veterinary Association to in-

clude information of local interest, but other contributions from Denmark will be published in the *Nordisk Veterinaermedicin*. It is anticipated that the veterinary medical association of each of the other countries will have its own publication for news and notices of local interest. The *Nordisk Veterinaermedicin* is owned jointly by the national veterinary associations of the four countries and the members automatically become suscribers by payment of annual membership dues to their respective association. Papers will be printed in Danish, Norwegian, Swedish, or one of the well-known languages. All papers will have an English summary. The Finnish veterinary medical association will translate into Finnish certain papers from the *Nordisk Veterinaermedicin* for reprinting in their local publication.

The new Journal will be issued in three editions with separate covers and advertising material for Denmark, Norway, and a joint edition for Sweden and Finland. However, the text will be the same for the three editions. The Journal appears monthly beginning with volume 1, No. 1, January, 1949. An editorial committee will consist of three representatives from each of the countries, plus a delegate from Iceland. The chief editor is Professor Vald. Adserson, Stockfiethsvej 7, Copenhagen, Denmark.—A.G.K.

Abstracts from the Indonesian Veterinary Journal

The following abstracts from Nederlands Indische Bladen voor Diergeneeskunde were prepared by Chas. H. Haasjes.—ED.

Salmonella Meleagridis Infection.—Two carriers of *Salmonella meleagridis* infection were discovered among 12 turkeys near Buitenzorg [*54*, Aug., 1947: 149-152]. The turkeys, half gobblers and half hens, were clinically healthy The organism was recovered from the kidney, liver, and testes of a male and from the ovary, an abnormal egg follicle, and the stomach of a hen.

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Anthrax Immunization.—E. De Boer summarizes [*54*, Aug., 1947: 137-143] the development of anthrax immunization and describes the variability of *Bacillus anthracis* as a fundamental principle of the vaccine.

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Goats Tolerate Phenothiazine.—Phenothiazine proved to be by far the most effective therapeutic agent for treating infections of *Haemonchus contortus* and *Oesophagostomum columbianum* in goats and sheep. The results were not as satisfactory for the treatment of Trichuris and Trichostrongylus but may possibly have a favorable effect in cases of serious infestations, even though a complete removal of the parasites is not likely to be attained. Goats were exceedingly tolerant of phenothiazine [*54*, Dec., 1947: 262-274].

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Pigs Infected with Trypanosoma Evansi.—Three pigs showing variable symptoms proved to be infected with *Trypanosoma evansi*. The identification of the infective agent was accomplished by the inoculation of different animals and morphological study. Naganol brought about a rapid cure [*54*, Dec., 1947: 254-261].

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Salmonellosis in Ducks.—Ducks around Buitenzorg were found to have salmonellosis. Carriers were found in the subacute cases and clinically healthy birds. One flock was seriously affected with tuberculosis.

Salmonella organisms were isolated from the genital organs and occasionally from the other organs and blood of 14 of 71 ducks tested. The feces was positive in two instances. Eighty-two eggs from infected flocks were not infected. Sixteen of the strains were tested serologically and in cultures and found to be *Salmonella typhimurium*.

The pathogenicity of some strains, tested in the rabbit, guinea pig, "tekoekoer" and "perkoetoet," caused acute fatal infection in some cases. The duck proved to be highly resistant. Five cubic centimenters injected intramuscularly and 10 cc. *per os* caused no harmful effects. The ducks did, however, become carriers of the infection as revealed by examination of the feces, eggs, genitals, intestines, and, upon culture, of the spleen [*54*, Aug., 1947: 120-136].

Bovine Mastitis Due to Human Streptococci

This is the first proved instance in Norway of infection in cattle due to human streptococci. The streptococci were virulent for mice and fibrinolytic for human fibrin. Trehalose, sucrose, lactose, salicin, and esculin were split but the hippurate test was negative. Serologic tests showed that strains from the cattle were group A. The infection was traced to workers in the dairy who had scarlet fever.—[*O. Grini and J. L. Flatla: Bovine Mastitis Due to Human Streptococci. Nord. Vet. Med., 1, (1949): 57-61.*]—A.G.K.

Listerella Infection in the Horse

This paper presents a review of the literature on listerellosis in animals with a list of the 26 references.

A case of listerellosis in a horse is described fully. The animal had symptoms of central nervous involvement with paralysis of the jaw, dysphagia, and a disordered gait. There were necrotic foci on the buccal mucosa. Multiple areas of necrosis were found in the liver. Histologically, these consisted of infiltration of lymphocytes. There was some perivascular

infiltration which was also seen in the kidneys. *Listerella monocytogenes* were identified in the liver and the edematous areas of the muscular tissue. The culture from this case and two other cultures were found to have a relative resistance to penicillin *in vitro*.—[*R. R. Svenkerud: Listerella Infections with Special Reference to Their Occurrence in the Horse. Norsk Vet.-tidsskr., 60, (Sept., 1948): 321-340.*] —A.G.K.

Hereditary Nature of Disturbances of the Equine Foot

A review of the literature indicates that the hereditary nature of diseases of the bones, joints, and ligaments in the horse's foot is not established.—[*P. Tuff: The Hereditary Nature of Disturbances in the Joint, Bones, and Ligaments of the Hoof in Horses. Norsk. Vet. Tidsskr., 60, (1948): 385-391.*]—A.G.K.

Newcastle Disease in China

Though epizoötic diseases of fowls resembling Newcastle disease have been reported from various parts of China, this is the first time that the etiologic agent has been isolated and identified. Some minor differences exist between the Chungking strain and the Nanking strain, and between our strains and those isolated in other parts of the world.—[*W. C. Chu, L. W. Chu, C. H. Huang, and J. S. Huang: Newcastle Disease in Chungking and Nanking. J. Agric. A. of China, 188, (July, 1948):15-28.*] —C.-S.L.

BOOKS AND REPORTS

Tropical Medicine

This is a two-volume record of the Fourth International Congresses on Tropical Medicine and Malaria. Volume I opens with a section on the plenary sessions, the banquet, and the special exercises commemorating the demonstration of mosquito transmission of yellow fever by Walter Reed, and mosquito transmission of malaria by Ronald Ross. This is followed by the section on research and teaching institutes, tropical climatology and physiology, bacterial and spirochetal diseases, virus and rickettsial diseases, and malaria.

Volume II contains the papers and proceedings of the sections on helminthic diseases, protozoan diseases, nutritional diseases in the tropics, tropical dermatology and mycology, tropical veterinary medicine, public health, and medical and veterinary entomology.

It is not within the scope of a review of this type to try to analyze and interpret the facts presented. However, the interested reader may get a more comprehensive appreciation of the scope of the Congresses by turning back to the articles regarding it in preceding issues of the JOURNAL: Program, May, 1948, p. 410; Officers, Oct., 1948, p. 369; Abstracts, March, 1949, p. 151.—[*Proceedings of the Fourth International Congresses on Tropical Medicine and Malaria. Carolyn Whitlock, Editor. Vol. I, 946 pp.; Vol. II, 864 pp. Cloth. Washington 25, D. C. Price $10.00.*]

Food Poisoning

The author has compiled, in this revised edition, the most recent information and developments in this rapidly-growing field of public health. Much of this information has previously been available only in widely dispersed writings in medical, veterinary medical, and public health publications.

The book provides accurate, concise information on problems which many veterinarians face when engaged in food inspection work. Following an opening chapter on the general approach to outbreaks of food poisoning—with specific questions for the alleged victim and the attending physician—the book deals authoritatively with such specific problems as chemical poisoning, poisonous plants and animals, botulism, staphylococcosis, salmonellosis, *alpha*-type streptococcosis, other bacterial causes, and the methods of differentiating infections from food poisoning. Each subject is handled with emphasis on symptoms, epidemiology, pathology, and specific differential diagnosis.

This is a book which veterinarians in public health fields will use almost constantly, and which the general practitioner will turn to whenever problems along this line are placed before him.—[*Food Poisoning. By G. M. Dack. Cloth. 184 pages. Revised ed. University of Chicago Press, Chicago 37, Ill. Price $3.75.*]

Microbiology and Man

Based upon the general premise that "The proper study of mankind is man," this book limits itself to consideration of those human problems which are interlaced with microörganisms. The four sections into which it is divided deal with fundamentals of microbiology; infection and resistance; common infectious diseases; and microbiology of air, food, milk, water, sewage, and soils.

Written primarily for students in human medicine, the book, nevertheless, contains much information applicable to veterinary medicine. The first section (which includes a chapter on the antibotic substances) is fully as important to veterinarians as to physicians. The second contains a chapter on epidemiology which may not be applied directly to animal diseases; and the third section concerns the veterinarian only in so far as many of the diseases discussed are transmissible from animals to man, and the animals may be the chief reservoirs of such

human infections. The final section includes information on those human diseases which may be acquired from consumption of, or contact with, foods of animal origin, or pollution of water and soil with the excrement of diseased animals.

It is primarily a textbook and, therefore, a ready reference for the veterinarian who regularly or frequently deals with problems in this field.—[*Microbiology and Man. By Jorgen Birkeland. Cloth. 525 pages. Illustrated. 2nd ed. Williams and Wilkins Co., Mt. Royal and Guilford Ave., Baltimore 2, Md. 1949. Price $5.00.*]

Isotopes in Biology and Medicine

The scientific horizon has been extended with the publication of this volume, which is a compilation of the papers presented by 19 of the nation's leaders in isotopic research in a symposium at the University of Wisconsin.

Although the book contains much technical information on the development, preparation, and detection of the radioactive tracers, it also contains summary reports of the investigations of the metabolism of proteins, carbohydrates, fats, and minerals. These help to explain the manner in which the animal body uses nutrient materials, and suggest methods of using specific tagged atoms to locate and combat malnutrition which interferes with the healing of wounds and fractures. The authors also discuss certain therapeutic uses of radioactive substances and some of the hazards incurred in using them.

This book is an authoritative résumé of present knowledge in what is probably the most serious problem of our time—what to do with radioactive substances. For the veterinarian who has followed the lead articles in the JOURNAL (May, 1948, p. 321; October, 1948, p. 325; March, 1949, p. 113; and May, 1949, p. 275), this book will amplify and clarify the subject. It will also serve as a base upon which progressive information can be compiled as it accumulates.—[*Symposium on the Use of Isotopes in Biology and Medicine. By H. T. Clarke and 19 additional authors. Cloth. 445 pages. Offset print. University of Wisconsin Press, 811 State St., Madison 5, Wis. 1949 reprint. Price $5.00*]

Virus Diseases of Man

The authors have prepared a comprehensive reference volume for the laboratory worker and the clinician interested in virus infections. In the field of veterinary medicine, it deals only with those viruses which may be transmitted by animals to man.

The first section discusses techniques for the microscopic and electron-miscoscopic examination of elementary bodies, methods of staining, filtering, centrifuging, and culturing the virus substances. It discusses the physicochemical properties of viruses, the development and significance of inclusion bodies, statistical methods of analysis, and many other details involved in a careful study of viruses and the diseases which they cause.

The later sections are divided into chapters for the numerous human virus diseases. These are grouped in accordance with the needs of the human clinician and laboratory worker, the paragraphs and chapters dealing with veterinary medical application of the information being interspersed throughout the text.

The scope of the book is indicated by the fact that its 1,202 pages are divided into 12 sections and 102 chapters. And for additional information, the chapters are provided with extensive reference lists.

While there can be no systematic or over-all evaluation of a text of such scope, a question is raised regarding the validity of some sweeping statements. For example, under rabies vaccination, the authors review a series of reports published in 1939 and 1940 and then open the summarizing paragraph with: "There is considerable doubt about the effect of mass vaccination of dogs on the incidence of rabies. . . ." The next paragraph reviews the successful work of Johnson in Alabama reported in 1947. The question arises because the summarizing statement was obviously prepared for the first edition (1940) and has not been modified despite apparent recognition by the authors of improved results with present-day vaccines. The statement can, therefore, be quoted, innocently or intentionally, as a true interpretation of the present status of mass vaccination. To do so will retard rabies eradication programs for another nine years, or until another revision of the book is issued.

The book is printed in clear type, easily read, and on excellent paper. The illustrations are sharp.—[*Virus Diseases of Man. By C. E. van Rooyen and A. J. Rhodes. Cloth. 1,202 pages. Illustrated. Thomas Nelson and Sons. New York, N. Y. 1948. Price $22.50.*]

Experimental Avian Tuberculosis

The authors isolated 45 strains of *Mycobacterium tuberculosis avium* from materials of infected chickens. Loewenstein's egg medium proved best for rapid growth of the bacilli. Intravenous injection of chickens with massive doses (1 mg.) of the organisms produced a septicemic disease of acute or subacute type. Injection with minimum doses (1/100,000 mg.) produced a chronic infection characterized mainly by progressive emaciation and nodular lesions in the digestive tract.—[*F. R. Jurado and A. P. de Fagonde: Biologic Studies of Mycobacterium Tuberculosis Avium. (Title translated.) Publication No. 259, Ministry of Agriculture, Buenos Aires, 1947.*]

THE NEWS

Charles Duncan McGilvray
1872-1949

When C. D. McGilvray (MCK '01), 77, 28 Wilgar Road, Toronto, retired principal of the Ontario Veterinary College, died on Apr. 18, 1949, his profession lost a staunch and colorful figure whose life and work are indelibly inscribed in the *livre d'or* of veterinary medicine. He was stricken with an acute illness at a social function and died unexpectedly the following day at St. Joseph Hospital of that city. Born in Glasgow, Scotland, Oct. 25, 1872, he came to Canada in 1886 and settled on a

Dr. Charles Duncan McGilvray

farm in Manitoba where he obtained his preliminary education. Flings at farming and general store work in a small community preceded his entrance into the Ontario Veterinary College, from which he was graduated in 1900. He received his M.D.V. at the McKillip Veterinary College in 1901 and was later honored with the degree of D.V.Sc. by the University of Toronto.

Dr. McGilvray was third in the succession of principals to head America's oldest college of veterinary medicine—Andrew Smith (1862-1908), A. A. E. Grange (1908-1918), C. D. McGilvray (1918-1945), Andrew L. MacNabb (1945. . . .). During the early part of his 27-year tenure, he started and completed plans to transfer the college to the campus of the famous agricultural college at Guelph, where, in 1922, he succeeded in having the first unit of the present physical plant erected and a competent faculty established — a notable achievement, all will agree, in the face of the unfavorable veterinary educational situation of that decade. Having the old school moved from an urban to a rural environment, the rebuilding of a capable staff, and the strategy required to do so against personal and political obstacles establishes the true character of the man, independent of the success attained in the collegiate sense. What Dr. McGilvray may have lacked in profound knowledge of the basic sciences or training as an educator was more than made up by his ability to organize, deputize, and supervize with unerring effect. He was a strict but fair disciplinarian who had learned the hard way to know what it takes to develop veterinarians who will be useful to their country; and he acquired that qualification from a keen knowledge of clinical work. His brilliant achievements in livestock sanitation in the Canadian Northwest, particularly his campaign against glanders that was menacing the instreaming settlers just after the turn of the century, will long be remembered as a lesson on the control of farm-animal diseases on a national scale. From these presents, a new principal of the Ontario Veterinary College emerged in 1918. Could anyone in the whole Dominion have been better qualified?

His was a full and long professional life and, although 77 may be regarded as a ripe old age, the youth of his mind and body at the dedication in July, 1948, of a new wing to the college he founded at Guelph, did not forecast his sudden departure within the year.

He is survived by his son Dr. C. Leroy McGilvray (ONT '35), small animal practitioner of Toronto, and two married daughters. Mrs. McGilvray (*née* Jessie Ann Deig), whom he married in 1907, died several years ago. Funeral services for Dr. McGilvray were held at the Knox Presbyterian Church at Guelph, April 20.—L.A.M.

AVMA Research Fellows

L. E. Johnson, born May 5, 1914, was educated at The Ohio State University (D.V.M. 1942 and M.Sc. 1943), and at the University of Illinois. He was a member of the veterinary faculty at The Ohio State University in 1942-1943 and 1948; at the University of Illinois from 1943 to 1945; and at Colorado A. & M. College from 1945 to 1948. In January, 1949, he started work under his AVMA fellowship at the Mayo Foundation, Rochester, Minn.

PLAN OF THE PROJECT

The immediate problem will be to absolve the course work, including languages (French and German), experimental surgery, and sur-

gical pathology. The surgical studies will involve learning the techniques used in human surgery and the gross and microscopic study of human pathologic tissue.

Later, a definite problem in surgical pathology will be developed and solved. The precise

Dr. L. E. Johnson

nature of this problem remains to be selected, but it will refer to adaptation of improved techniques to replace those now commonly used in veterinary surgical pathology.

STUDENT CHAPTER ACTIVITIES

Student Activities at the Detroit Meeting of the AVMA.—Several student organizations have sent in the name of their representative for the meeting during the AVMA convention in Detroit. The meeting will be held in parlor "F" of the Statler Hotel at 9 a.m. on July 11. Faculty advisers are urged to attend the meeting, and more than one student from each school can attend. However, it is presumed that each organization will be limited to one vote. An AVMA staff member will be at the meeting.

An agenda for the meeting, taken largely from the recommendations of the chapter representative meeting of last year, has been proposed. It will cover items such as the plan for a national organization of student representatives, chapter records, uniform regulations and the model constitution, chapter activities, and means whereby the AVMA can be of more assistance to student chapters and clubs.

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Alabama Chapter.—The Alabama Polytechnic Institute Student Chapter of the AVMA has 250 members and meets biweekly. Some of the speakers of recent meetings have been Drs. B. T. Simms, chief, U.S. Bureau of Animal Industry, Washington, D.C.; C. C. von Gremp, Decatur, Ga.; P. W. Tetter, Birmingham, Ala.; and L. A. Mosher, Atlanta, Ga.

In additional to the three annual awards for veterinary students (Borden, John Gillman, and E. A. Davis), a new award will be donated by Dr. Tetter to the most practical graduating senior. This award will include instruments valued at $100. Miss Fay Muckel, as the senior in veterinary medicine with the highest scholastic average, was this year's Borden Award winner.

s/A. F. REID, JR., *Secretary.*

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Cornell Chapter.—The Cornell University Student Chapter of the AVMA produced a hilarious comedy, a case report of juniors who ate too much CORN, in the James Law Amphitheater on April 6, 1949, with some interesting takeoffs on the names of respected personages who loom large in the history and development of veterinary medicine in this country—E. P. Leopard, Generalissimo Jenkins, and H. J. McBeagle, to name a few. The anamnesis was "gloating, bustitis feared"; the diagnosis, by Dr. Gastrocnemius J. Dermacentor, was "Junioritis with possibility of bustitis for majority of herd." The prognosis was 'horrible," and the treatment, "a day in the life of the good Dr. G. J. Dermacentor."

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Kansas Chapter.—During February, the members of the Kansas State College Student Chapter of the AVMA heard Dr. N. H. Casselberry, head of the Veterinary Division of Cutter Laboratories, Berkeley, Calif., speak on "The Organization and Operation of a Biological and Pharmaceutical Manufacturing House"; James Kirkeminde, animal husbandry student at Kansas State College, discuss "Auctioneering at Farm Sales"; and Armin Samuelson, agriculture student, present an illustrated talk of "Present-Day European Agriculture."

Drs. A. R. Borgman (KSC '46) and F. H. Oberst (KSC '43) were appointed sponsors of the Chapter for the spring semester.

On March 15, Dr. Glenn Case (KSC '40), Kewanee, Ill., presented an illustrated lecture on swine diseases he has treated. Dr. R. C. Klussendorf, assistant executive secretary of the AVMA, addressed a special meeting on April 1 on the "Purpose of Student AVMA Chapters." Dr. Paul McCleave (Ph. D.), president of the College of Emporia, Emporia, Kan., spoke at the April 15 meeting on experiences of his recent trip to Europe.

s/ROBERT J. WEAVER, *Secretary.*

Michigan Chapter.—Officers of the Michigan State College Student Chapter of the AVMA are: Roger Brown, *president;* Robert Hafner, *vice-president;* David Van Meter, *president-elect;* Carl Olsen, *secretary;* Otto Wolford, *treasurer;* Russell Phillips, *sergeant-at-arms;* Dr. William Riley, *faculty advisor.*

At the April 7 meeting, Mr. F. G. Seaver discussed "Purebred Dogs," and the film "Partners" was shown through the courtesy of the Ralston-Purina Company. There were 140 students in attendance at this meeting.

S/ROBERT M. HAFNER, *Vice-President.*

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Missouri Chapter.—The Veterinary Club of the University of Missouri conducted its monthly meeting in the Veterinary Hospital and Clinic Building on April 11, 1949.

S/E. J. KRAUTMANN, *Secretary.*

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Ontario Chapter.—The Ontario Veterinary College Student Chapter of the AVMA prepared an exhibit for the Agricultural College Fair, featuring the public health aspect of veterinary medicine and stressing the relationship of animal disease to human health. Statistics as to the incidence and fatality of diseases transmissible from animal to man were presented along with methods of diagnosis and some of the newer drugs used in treatment.

At the annual banquet on March 31, a trophy, which will be presented annually to the junior student most outstanding in sportsmanship,

Exhibit, featuring the public health aspect of veterinary medicine, shown at the Agricultural College Fair by the Ontario Veterinary College Student Chapter of the AVMA.

academic qualifications, extracurricular activities, and personality, was awarded to Miss Joan Belcher, Roblin, Manitoba.

S/GEOFFREY LORD, *President.*

WOMEN'S AUXILIARY

Mrs. Bild, Secretary to the House of Representatives.—The secretary of the House of Representatives keeps records of all state, provincial, and regional auxiliaries with the names of representatives who serve their organizations as delegates to this official group. She also serves as secretary for the meeting of the House and keeps close records of all business and discussions.

The meeting of the House of Representatives is held in conjunction with the Women's program during the annual meeting of the AVMA. Delegates of this organization pass on all executive business that has been previously dis-

Mrs. C. E. Bild

cussed by the board before it passes on to the general assembly.

Copies of the minutes are mailed to the auxiliary presidents to be read before the next annual meeting. Through this contact, the auxiliaries are given another tie with the planning done by the Executive Board for the growth and development of the Auxiliary.

Mrs. C. E. Bild, of Miami, Fla., is full of enthusiasm for the Auxiliary and has served her state as an efficient and interested member for many years. She is highly respected in her home state of Florida as well as by those who have the privilege of knowing her well.

S/(MRS. A. E.) ETHLYN BOIT, *President.*

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Georgia Auxiliary Organized.—At the quarterly meeting of the North Georgia Veterinary Medical Association in Athens on March 17, 1949, wives of the veterinarians formed an auxiliary to the GVMA. Temporary officers were appointed and plans were made for a general election to be held in June during the annual meeting of the GVMA in Atlanta. Mrs. Chas. C. Rife was appointed *general chairman* for the organization; Mrs. J. L. Hopping, Sr., Atlanta, is *vice-chairman;* Mrs. C. W. Barber, Athens, *secretary;* and Mrs. E. E. Chambers, Rossville, *treasurer.*

The project of the auxiliary is to sponsor a veterinary library for the new school of veterinary medicine at the University of Georgia.

S/MRS. C. W. BARBER, *Secretary.*

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Northern Illinois Auxilary.—The Women's Auxiliary of the Northern Illinois Veterinary Medical Association met at the Hotel Faust in Rockford on April 13, 1949. In addition to the business meeting, members were entertained

at a luncheon and at a cocktail hour and the banquet.

s/MRS. A. A. LEGNER, *Secretary.*

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Michiana Auxiliary.—The regular monthly meeting of the Women's Auxiliary to the Michiana Veterinary Medical Association was held at the Hotel Elkhart, Elkhart, Ind., on March 10, 1949. After the business meeting, bingo was played with the proceeds going into the treasury.

s/MRS. ALAN W. WINTER, *Secretary.*

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Milwaukee Auxiliary.—The Women's Auxiliary of the Milwaukee Veterinary Medical Association met at the home of Mrs. R. J. Hinkle on March 15. Hostess for the evening was Mrs. Gordon Marold.

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North Central Iowa Auxiliary.—The Women's Auxiliary to the North Central Iowa Veterinary Medical Association met in the Wahkonsa Hotel in Fort Dodge on April 21, 1949. A luncheon and an afternoon of bridge and shopping were enjoyed by members.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

BERLIN, SEIBERT L.
McConnellsburg, Pa.
V.M.D., University of Pennsylvania, 1946.
Vouchers: F. H. Burr and D. B. Ramey.

BOOKMAN, PHILIP
124 Mapes Ave., Newark 8, N. J.
D.V.M., Alabama Polytechnic Inst., 1948.
Vouchers: S. S. Nebb and F. L. Bartlett.

MAGILL, JOHN
608 Second St., Pocomoke City, Md.
D.V.M., Chicago Veterinary College, 1914.
Vouchers: G. W. Tyler and F. A. Renne, Jr.

POTTER, ROBERT R.
Bear Ridge Rd., Pleasantville, N. Y.
V.M.D., University of Pennsylvania, 1947.
Vouchers: F. W. Andrews and D. B. Crane.

Second Listing

Bartol, Frank H., 616 W. 5th St., Willmar, Minn.

Brock, Gunther A., 110 Exposition Ave., Dallas, Texas.

Buckwalter, Robert C., 6810 Carlisle St., Philadelphia 26, Pa.

Colando, Andrew C., Point-A-View Farm, Yardley, Pa.

Erkel, Ralph L., 1626 9th Ave. S., St. Cloud, Minn.

Genest, Paul, Laboratoire de Recherches Vétérinaires, St. Hyacinthe, P.Q., Canada.

McIntosh, Arthur J., 721 Locust St., La Porte City, Iowa.

Mullins, Orin E., 1251 Thompson Ave., Glendale 1, Calif.

Sabban, Mohammed S., 12 Sirry Pasha St., Mounira, Cairo, Egypt.

Stocking, Reginald A., 3166 Los Feliz Blvd., Los Angeles 26, Calif.

Thompson, David C., Virden, Manitoba, Canada.

1949 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Kansas State College*

All of the following applicants with the exception of those otherwise noted, were vouchered for by Drs. E. J. Frick and E. E. Leasure.

AIKEN, JOHN M., D.V.M.
2600 Dakota Ave., South Sioux City, Neb.

BOLEY, LYLE T., D.V.M.
108 E. Division St., Kewanee, Ill.

BREDBENNER, JOSEPH W., D.V.M.
1313 Orange St., Berwick, Pa.

CAIN, RICHARD A., D.V.M.
Rt. 2, Independence, Kan.

CHAFFEE, GEORGE H., D.V.M.
44 A. Hilltop Cts., Manhattan, Kan.

CHURCH, ELWYN L., D.V.M.
Battle Creek, Neb.

CROGHAN, DONALD L., D.V.M.
1201 Vattier, Manhattan, Kan.

DAVIS, JAMES C., D.V.M.
111 N. E. 9th, Abilene, Kan.

DENISON, MARGARET P., D.V.M.
1801 Deronshire Dr., Oklahoma City, Okla.

DOBY, PAUL B., D.V.M.
Okolona, Ark.

FIELD, MARK, D.V.M.
612 N. Park Ave., Park Rapids, Minn.

FISHBURN, FRANK J., D.V.M.
724 E. Simpson, McPherson, Kan.

FOCKELE, WILLIAM R., D.V.M.
916 Poyntz Ave., Manhattan, Kan.

FORTENBERRY, JACOB D., JR., D.V.M.
1210 Bertrand, Manhattan, Kan.

GELBART, NATHAN, D.V.M.
157 Harrison St., Paterson, N. J.

GOFORTH, JOHN H., D.V.M.
216 S. 17th, Manhattan, Kan.

GREGORY, DAVID W., D.V.M.
55 B Hilltop Cts., Manhattan, Kan.

HARBERT, GLEN A., D.V.M.
512 S. Frisco Ave., Tulsa, Okla.

HARGAS, JOHN, D.V.M.
Shady Knoll Route, Phillips, Wis.

GONZALEZ-CALDERIN, GABRIEL, D.V.M.
70 De Diego St., Rio Piedras, P.R.

HEMENWAY, KEITH A., D.V.M.
1310 N. 11th, Manhattan, Kan.

HORAN, CORNELIUS D., D.V.M.
Apt. 20-B, Elliot Ct., Manhattan, Kan.

HUGHES, JOHN P., D.V.M.
125 S. Eye St., Madera, Calif.

JACOBS, STANLEY B., D.V.M.
1001 N. 5th St., Manhattan, Kan.
Vouchers: R. R. Dykstra and E. J. Frick.

JONES, HOWARD M., D.V.M.
203 N. Juliette, Manhattan, Kan.
Vouchers: J. E. Mosier and R. Borgmann.
KAY, EDWIN W., JR., D.V.M.
Rt. 3 Box 172, San Jose, Calif.
KENNEDY, PETER C., D.V.M.
180 Longwood Ave., Boston 15, Mass.
KLOVER, GEORGE W., D.V.M.
Ramona, Kan.
KNILANS, RICHARD J., D.V.M.
1620 Center Ave. Rd., Janesville, Wis.
LARSON, WORTH N., D.V.M.
8th & Ratone, Manhattan, Kan.
LEHMAN, BERNARD E., D.V.M.
1268 Noble Ave., Bronx, N. Y.
Vouchers: J. E. Mosier and E. J. Frick.
MCGINITY, JOSEPH T., D.V.M.
Hutchinson, Kan.
MACKINTOSH, DAVID O., D.V.M.
1710 Poyntz Ave., Manhattan, Kan.
Vouchers: E. R. Frank and E. J. Frick.
MARTIN, DALE E., D.V.M.
Halstead, Kan.
MERRITT, DOUGLAS N., D.V.M.
Atchison, Kan.
MERSKY, HAROLD A., D.V.M.
Woodbine, N. J.
OBRECHT, MARTIN A., D.V.M.
Harlan, Iowa.
OSBORN, IVAN S., D.V.M.
112 N. 2nd St., Le Sueur, Minn.
PHILLIPS, DARRELL C., D.V.M.
1108 Bluemont Ave., Manhattan, Kan.
POLLACK, MURRAY A., D.V.M.
3543 E. 151st St., Cleveland, Ohio.
POMEROY, JAMES A., D.V.M.
882 Linwood Ave., St. Paul 5, Minn.
POOLEY, JAMES B., D.V.M.
1404 Fairchild, Manhattan, Kan.
POTTROFF, GERALD L., D.V.M.
724 Kearney, Manhattan, Kan.
REA, GLENN B., D.V.M.
Garden City, S. Dak.
SANTORO, WILLIAM M., D.V.M.
21 Laurel St., Brattleboro, Vt.
SAPERSTEIN, HYMAN H., D.V.M.
43C Hilltop Cts., Manhattan, Kan.
SCHULTZ, WILLARD J., D.V.M.
749 Highland Ave., Beloit, Wis.
Vouchers: F. H. Oberst and E. E. Leasure.
SIBURT, THOMAS P., D.V.M.
20 Tenth St., McMechen, W. Va.
Vouchers: R. D. Barner and R. R. Dykstra.
STEWART, GEORGE C., JR., D.V.M.
Blackwell, Okla.
STRONG, KENNETH D., D.V.M.
Stromsburg, Neb.
SWIFT, WARREN G., D.V.M.
1631 Humboldt, Manhattan, Kan.
TEMPLETON, JOHN W., D.V.M.
1715 Colorado St., Manhattan, Kan.
WATSON, TOM B., D.V.M.
1030 Kearney St., Manhattan, Kan.
WEIS, JOACHIM, D.V.M.
627 Seneca St., Palo Alto, Calif.
WELLS, CECIL G., JR., D.V.M.
R. R. No. 6, Box 717, Tulsa, Okla.
WEMPE, CHARLES M., D.V.M.
Riverside Stock Farm, Seneca, Kan.
WEMPE, LOUIS A., D.V.M.
601 Elm St., Marysville, Kan.
WINN, LEONARD H., D.V.M.
1104 Moro, Manhattan, Kan.
WOOLSEY, JOHN H., D.V.M.
163 Bartlett St., Woodland, Calif.

Texas A. & M. College

BARAK, JERRY D., D.V.M.
3620 University Blvd., Houston, Texas.
Vouchers: A. A. Lenert and H. E. Redmond.
BRITE, ROY D., D.V.M.
2600 Todd Ave., Bryan, Texas
Vouchers: H. T. Barron and A. A. Lenert.
BRUNDRETT, JACK M., D.V.M.
1809 Atwood, Dallas, Texas.
Vouchers: W. W. Armistead and H. E. Redmond.
ELLIOTT, HENRY G., D.V.M.
500 Georgia Ave., Jacksonville, Texas.
Vouchers: W. W. Armistead and A. A. Lenert.
LYLES, THOMAS W., D.V.M.
5221 El Campo, Fort Worth, Texas.
Vouchers: H. E. Redmond and F. P. Jaggi.
MCCARTY, ROBERT T., D.V.M.
1408 Harrington Ave., Fort Worth, Texas.
Vouchers: L. G. Cloud and W. W. Armistead.
PACHAR, MAX A., D.V.M.
530 Russell Cts., Orange, Texas.
Vouchers: A. A. Lenert and H. T. Barron.
RYAN, TERRELL B., D.V.M.
Rt. 2. Box 367, San Angelo, Texas.
Vouchers: H. E. Redmond and S. S. Kreuz.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S. Bureau of Animal Industry are reported as of April 21, 1949, by Chief B. T. Simms.

TRANSFERS

Clyde Bailey, from Danville, Ill., to St. Louis, Mo.

Francis W. Beck, from Jacksonville, Fla., to Newark, N. J.

Samuel J. Berger, from New York, N. Y., to Albany, N. Y.

Granville W. Breed, from Trenton, N. J., to Atlanta, Ga.

Guy W. Eberhardt, from Bristol, Va., to Orangeburg, S. Car.

William D. Foss, from Madison, Wis., to Chicago, Ill.

Cecil L. Hendee, from Lansing, Mich., to Jackson, Miss.

Earl W. Herbert, from Olympia, Wash., to Spokane, Wash.

Troy S. Hopkins, from Shreveport, La., to Kinston, N. Car.

Guy S. Jackson, from Richmond, Va., to Salem, Va.

Ralph V. Kelling, from Mexico City, Mexico, to Denver, Colo.

Charles R. Omer, from Baltimore, Md., to Olympia, Wash.

Richard E. Pflugrad, from Albany, N. Y., to Richmond, Va.

Glen H. Randall, from Fort Worth, Texas, to Sioux Falls, S. Dak.

James A. Sluss, from Salem, Va., to Bristol, Va.

Joseph S. Stein, from Baltimore, Md., to Washington, D. C.

James A. Sullivan, from Sioux Falls, S. Dak., to Fort Worth, Texas.

Conwell B. Swindle, from Jacksonville, Fla., to Beltsville, Md.

H. Hayward Taylor, from Kinston, N. Car., to Sioux City, Iowa.

Thomas E. Utley, from Chicago, Ill., to Baltimore, Md.

Roland G. Van Sant, from Baltimore, Md., to Los Angeles, Calif.

Abram D. Woodruff, from Chicago, Ill., to Kansas City, Kan.

SEPARATIONS

Don W. Amarasinghe, Chicago, Ill.
John F. Carnes, Mexico City, Mexico.
Murrell O. Robinson, Beltsville, Md.
Robert A. Sturtevant, Mexico City, Mexico.

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Discontinue Publication of Journal of Agricultural Research.—Because of a lack of operating funds, publication of the *Journal of Agricultural Research* will be suspended after the issue of June 15, 1949, which will complete volume 78. This Journal, which is published by the U.S. Department of Agriculture in cooperation with the Association of Land-Grant Colleges and Universities, has been distributed free of charge to libraries, laboratories, experiment stations, etc.

s/M. C. MERRILL, *Chief of Publications.*

AMONG THE STATES AND PROVINCES

Arizona

Rabies Control Conference.—The Pan American Sanitary Bureau sponsored a U. S.-Mexican Border Rabies Control Conference in the Hotel Montezuma in Nogales on April 26, 1949. Speakers from the United States were Drs. James H. Steele, Veterinary Public Health Division, Communicable Disease Center, Atlanta, Ga.; Martin D. Baum, U. S. Bureau of Animal Industry, Denver, Colo.; Kenneth S. Young, Austin, Texas; James Doughty, New Mexico; and Oscar Sussman, State Department of Health, Trenton, N. J. Speakers from Mexico were Drs. Jose Figueroa, Villa Obregon; Rafael Dominguez; Javier Berlanga Berumen; Salvador Villagomez; and Mario Appendini.

California

Opportunities for Veterinarians.—The California Bureau of Animal Industry offers many excellent opportunities for careers in veterinary medicine under the civil service merit system to graduates of recognized veterinary colleges. The entrance salary is $358 with increases to $436. California residence requirement is waived and the examination will be nationwide. Minimum qualifications for the examination are a degree in veterinary medicine from a recognized institution. Final year students may take the examination but they must have a degree before they become eligible for appointment.

At this time, vacancies exist for veterinarians in the animal disease field, meat inspection, and field work.

Final filing date for the mid-July examination is June 25. For applications, write State Personnel Board, 1015 L Street, Sacramento, Calif.

s/JOHN F. FISHER.

Colorado

Dr. Newson to Take Temporary Professorship.—Mr. William E. Morgan, president of Arkansas A. & M. College, has been appointed president of Colorado A. & M. College to succeed Dr. I. E. Newsom, former dean of the Division of Veterinary Medicine and former vice-president of the College, who has been president since the death of Dr. Roy M. Green on Jan. 22, 1948. Dr. Newsom, an alumnus who has been a member of the faculty since 1907, reached retirement age last year. He will continue as president until Mr. Morgan assumes the duties, and will then take a temporary professorship in the Division of Veterinary Medicine, the position he was scheduled to take July 1, 1948, at which time he had planned to retire as dean of veterinary medicine. He was succeeded as dean by Dr. Floyd Cross.

District of Columbia

District Association.—The second quarterly meeting of the District of Columbia Veterinary Medical Association was held at the Mayflower Hotel on April 7, 1949. Dr. A. M. Lee spoke on "The Present Status of X Disease (Hyperkeratosis) of Cattle"; and Dr. H. R. Seibold discussed "The Histopathology of Hyperkeratosis." Both subjects were illustrated.

s/CLARENCE H. THOMPSON, JR., *Secretary.*

Georgia

Veterinary Practice Act Fails Passage.—The 1949 Session of the General Assembly of Georgia failed to pass the Veterinary Practice Act. It was believed that the Act would be passed, as much time was taken to iron out differences between druggists, feed manufacturers, poultry industries, and the Farm Bureau, and the support of all these organizations was assured. The Bill will be amended, shortened, and presented again in 1950.

Illinois

Dr. Link Addresses Pharmaceutical Association.—Dr. Roger P. Link represented the veterinary profession and addressed the meeting of the American Pharmaceutical Manufacturer's Association in Chicago, February 24. Dr. Link is chairman of the AVMA committee on Therapeutic Agents and Appliances and AVMA representative to the Interdepartmental Committee on Trade Names for Insecticides. In his talk, he stressed the advancements of the profession during recent years and summarized the uses veterinarians are making of the newer drugs. Particular reference was made

to the use of sulfonamide, antibiotic, anthelmintic, arsenical, and ammonium preparations; antihistamines, insecticides; and the antimalarial drugs, paludrine and quinoline diphosphate, for the treatment of anaplasmosis.

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Mississippi Valley Annual Picnic.—The annual summer picnic of the Mississippi Valley Veterinary Medical Association will be held on June 19 at Lake Storey, Galesburg, Ill. A western barbecue and square dance have been planned. For reservations, write R. J. Kirkpatrick, 1235 N. Henderson St., Galesburg, Ill.

s/R. J. KIRKPATRICK, *Secretary.*

Indiana

Brucellosis Fight.—"Test Animals and People in Brucellosis Fight" is the headline of a story (*Prairie Farmer*, April 16, 1949) which tells of the township testing of animals and people in Indiana. Local physicians, farm organizations, public health workers, and veterinarians from the Indiana State Board of Health and the U.S. Bureau of Animal Industry worked together to complete the testing in two more townships. Every farm animal on 88 farms and 304 people were tested in one township, and 1,800 animals on 78 farms and 200 people were tested in the other.

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Personal.—Dr. D. D. Baker, 972 Ellenberger Parkway, Indianapolis, has been appointed resident secretary of the Indiana Veterinary Medical Association.

s/W. W. GARVERICK, *Secretary.*

Iowa

East Central Society.—Forty-five veterinarians from 12 counties were in attendance at the dinner meeting of the East Central Iowa Veterinary Medical Society in the Hotel Jefferson, Iowa City, April 13, 1949. A sound film "The Living Earth," loaned by the University of Iowa, was shown. Mr. Guy F. Hershey, Cedar Rapids, representative of Ft. Dodge Laboratories, Inc., gave an illustrated talk on "Newcastle Disease." Dr. Joe W. Giffee, Cedar Rapids, swine disease expert, U.S. BAI, discussed "Transmissible Gastroenteritis of Swine." Drs. Harry D. McCreedy, North English; Samuel G. Paul, Clarence; A. R. Stephenson, Bennett; Geo. A. White, Riverside; John W. Carey, West Liberty, M. C. Larson, Keystone; and J. L. Beaver, Grinnell, participated in a discussion of this paper.

Those who discussed business methods for practitioners were Drs. P. V. Neuzil, Blairstown; Chas. E. Bassler, Ainsworth; Tom T. Bowstead, Riverside; Wiley Wolfe, DeWitt; E. C. Howe, Iowa City; Jas. R. Arnold, West Branch; and M. C. Larson, Keystone.

The program was arranged by the Johnson County group, headed by Dr. F. J. Crow of Iowa City.

s/W. C. HOWE, *Secretary.*

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North Central Association.—The North Central Iowa Veterinary Association met at the Wahkonsa Hotel in Fort Dodge on April 21, 1949. Dr. L. T. Railsback, Ellsworth, Minn., spoke on "Swine Obstetrics"; and Dr. Damon Catron, Iowa Experiment Station, Iowa State College, Ames, discussed "Swine Nutrition." The films "Newcastle Disease," "The Fight Against Rabies," and "The Diagnosis of Rabies" were shown.

s/B. J. GRAY, *Secretary.*

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Homecoming for Veterinary Alumni.—Invitations are being sent to alumni of the Division of Veterinary Medicine of the Iowa State College to inform them of the homecoming and reunion being planned for Oct. 13, 1949. Special committees will make arrangements for hotel reservations and entertainment. Further information may be obtained by writing to Mr. Eugene L. Whitford, Division of Veterinary Medicine, Iowa State College, Ames, Iowa.

s/EUGENE L. WHITFORD, *Publicity Chairman.*

Massachusetts

Summer Program in Food Technology.—The Massachusetts Institute of Technology announces a summer program in food technology from June 13 to July 1, 1949. Early registration is advisable since enrollment is limited. Tuition for the course, which is accredited, is $90. For further information, write Professor B. E. Proctor, Room 20-C-130, Massachusetts Institute of Technology, Cambridge, Mass.

Minnesota

Southern Society.—The Southern Minnesota Veterinary Medical Society met at the Hormel Sales Cabin, north of Austin, on April 27, 1949. Dr. T. W. Gullickson, associate professor, Division of Dairy Husbandry, University of Minnesota, spoke on "Recent Research in Dairy Cattle Nutrition"; and Dr. F. W. Crawford, U.S. BAI inspector in charge of the Geo. A. Hormel & Company Austin Plant, discussed "Common Causes of Condemnation in Meat Inspection Service."

Members were entertained at a Smorgasbord furnished by Geo. A. Hormel & Company.

s/J. B. FLANARY, *Secretary.*

Missouri

Southeast Association.—The Southeast Missouri Veterinary Medical Association held its spring meeting at Farmington on April 13, 1949. The scientific program follows:

DR. S. W. HAIGLER, St. Louis: "Canine and Feline Practice Pointers."

DR. S. F. ROSNER, Omaha, Neb.: "Erysipelas and Other Septicemias of Swine."

DR. H. E. CURRY, state veterinarian, Jefferson City: "State Brucellosis Control Program."

DR. ANTHONY BOTT, East St. Louis, Ill.: "X Disease" (with illustrations).

DR. W. C. DILLARD, Farmington: "Some Case Reports of Interest Over the Years."

At the business session, Dr. H. E. Dickman, Perryville, was elected delegate and Dr. F. A. Stepp, Sikeston, alternate, from the Southeastern District to the Executive Board of the Missouri VMA. Retiring delegate and alternate are Drs. J. M. Cullison and C. T. Old, respectively.

s/F. A. STEPP, *Secretary.*

Nebraska

To Discuss Hog Cholera Abroad.—Dr. J. D. Ray, research pathologist of the Corn States Serum Company has been chosen to discuss hog cholera at the coming international veterinary congress in London. Except in the United States and Canada, the disease is known as swine fever.

New York

New York City Association.—The Veterinary Medical Association of New York City, Inc., met at the Hotel Statler on May 4, 1949. Col. Raymond Randall, V. C., Army Medical Department, Research and Graduate School, Army Medical Center, Washington, D. C., discussed "Canine Leptospirosis"; and Dr. Herman R. Siebold, Pathological Division, U. S. Bureau of Animal Industry, Washington, D. C., spoke on "Canine Histoplasmosis."

New members admitted at the April 6 meeting were Drs. Mary Hallenbeck, Sperry C. Kinton, and Arthur Trayford. At this meeting, it was announced that a collection of $75, made at the March meeting to aid Dr. Joseph Marek in Hungary, had been delivered. A translation of a letter from Dr. Marek was read. The Association has sent ten CARE packages to Dr. Ladislaus Novak of Vienna. Dr. Novak, in return, has sent books of outstanding interest to the New York City Association which have been presented to the Flower Library, New York State Veterinary College, Cornell University.

S/C. R. SCHROEDER, *Secretary.*

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Personal.—Dr. J. W. Finlay (MSC '47), previously associated with Dr. Boyd Jeffers, Lexington, N. Y., has moved to Mexico City where he is employed by the government on the foot-and-mouth disease control project.

Ohio

North Central Association.—The North Central Ohio Veterinary Medical Association met on March 29, 1949, in Delaware, Ohio. Dr. Harry Geyer, state veterinarian, spoke on "The Use of Newcastle Disease Vaccine in Ohio." Dr. Clarence R. Cole, chairman of the Department of Veterinary Pathology, presented a paper on "The Differential Diagnosis of Newer Cattle Diseases" (with illustrations).

The new officers are Drs. A. G. Duber, Delaware, *president;* and A. C. Schafstall, New Washington, *secretary-treasurer.*

S/CLARENCE R. COLE.

Ontario

OVC Featured in Alumni Publication.—The Ontario Veterinary College and the membership of its staff were featured in an article in the *Varsity Graduate,* the alumni publication of the University of Toronto. The losses resulting from animal diseases in Canada and the contributions the college and its graduates are making toward reducing these losses were highlighted. Several of the staff members were complimented specifically for their fine work as were some of the alumni who have risen to positions of fame in the profession.

Pennsylvania

Bucks-Montgomery Association.—The Bucks-Montgomery Veterinary Medical Association met April 13, 1949, at the Moose Home in Doylestown. Dr. W. E. LaGrange, School of Veterinary Medicine, University of Pennsylvania, spoke on "Metabolic Diseases of Cattle."

S/J. G. SHUTE, *Secretary.*

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Keystone Association.—The Keystone Veterinary Medical Association met at the University of Pennsylvania School of Veterinary Medicine on May 4, 1949. Dr. J. R. M. Innes, research associate, Chemical-Biological Coördination Center, Washington, D. C., discussed "The Relationship of Distemper Injection to the Etiology of Canine Encephalopathies."

S/RAYMOND C. SNYDER, *Secretary.*

South Carolina

Business Meeting. — The annual business meeting of the South Carolina Association of Veterinarians was held in Columbia on Jan. 18, 1949. Officers elected for the ensuing year are Drs. R. L. Willis, Charleston, *president;* S. M. Witherspoon, Marion, *president-elect;* G. K. Smith, Spartanburg, *vice-president;* and R. A. Mays, Columbia, *secretary-treasurer.*

Dr. H. L. Sutherland of Union, was reëlected for recommendation to the governor as a member of the Board of Veterinary Examiners. His appointment was confirmed by the Honorable J. Strom Thurmond.

S/R. A. MAYS, *Secretary.*

South Dakota

Association Officers.—Officers elected at the annual meeting of the South Dakota Veterinary Medical Association on Oct. 21-22, 1948, were Drs. J. O. Buck, Sioux Falls, *president;* F. W. Nold, Madison, *vice-president;* and R. M. Scott, Sioux Falls, *secretary-treasurer.* Elected to the Executive Committee were Drs. D. L. Cotton, Beresford; J. M. Bailey, Parker; R. F. Freeman, Canyon; and O. H. Stalheim, Vermillion.

S/R. M. SCOTT, *Secretary.*

Tennessee

Southern States Brucellosis Conference.—The Southern States Brucellosis Conference met on April 29-30, 1949, at the Hotel Chisca, Memphis, Tenn. Among the speakers on the program were the following veterinarians: Drs. B. T. Simms, chief, U.S. Bureau of Animal Industry, Washington, D. C.; A. K. Kuttler, veterinarian in charge, Tuberculosis and Brucellosis Eradication Division, BAI, Washington, D. C.; R. A. Hendershott, secretary, U.S. Livestock Sanitary Association, Trenton, N. J.; J. V. Knapp, state veterinarian, Tallahassee, Fla.; W. R. Baynes, assistant state veterinarian, Raleigh, N. Car.; W. T. Oglesby, Department of Veterinary Science, Louisiana State University, Baton Rouge, La.; Dr. T. B. Clower, Douglas, Ga.; and Raymond Fagan, Communicable Disease Center, Cambridge, Mass.

Beef and dairy breeders also appeared on the program.

s/A. K. KUTTLER.

Virginia

VPI Veterinarians Prepare Article on Control for Parasites.—College veterinarians at Virginia Polytechnic Institute, Blacksburg, prepared an article on Control for Parasites and Common Diseases which appeared in the April, 1949, issue of *The Eastern Breeder*. The article, covering blackleg, pink eye, foot-rot, internal parasites, cattle lice, grubs, hemorrhagic septicemia, pneumonia, grass tetany, and bloat, discussed symptoms as well as methods of control.

Wisconsin

Milwaukee Association.—The April 19 meeting of the Milwaukee Veterinary Medical Association was held in the Wisconsin Humane Society Lecture Hall. Dr. W. O. Brinker, Department of Surgery and Medicine, Michigan State College, discussed "Fractures of Small Animals."

s/K. G. NICHOLSON, *Secretary.*

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Personal.—Mrs. H. E. Horel, wife of Dr. H. E. Horel (CVC '11), Augusta, and mother of Dr. J. T. Horel (ONT '37), Stevens Point, died early in April, 1949.

FOREIGN NEWS

Australia

Sheep Production.—For scientific and practical knowledge on large scale sheep production, the world's veterinary circle pays homage to Australia and New Zealand, which have an average of 140,000,000 head. Although the continent alone had 125,000,000 head in 1943, the mean for recent years has been around 110,000,000 and for New Zealand, 34,000,000. A sharp drop in the number, on account of the drought of 1945, made a deep impression on the world's meat supply and thus demonstrated the importance of this source of human subsistence for all of the industrial world. Being a "first" in its agriculture, planning ways and means of aggrandizing sheep production is uppermost in mind and, therefore, provides lessons of value in sheep husbandry. Among noteworthy movements recently published are curtailing death losses, improving the meat quality of wethers and old ewes, controlling flies, rabbits, and predatory animals, surface seeding and top dressing of pasture land, the growing of fodder crops, the prevention of overstocking, stepping up lambing, and over-all management that will increase the number of sheep by 25 per cent.*

*Data taken from the *Journal of the Department of Agriculture of South Australia*, October, 1948.

Brazil

Oral BCG Vaccination.—The vaccination of 20,516 infants from 4 to 10 days old by oral administration is thought to be a forward step in the vaccinal method of preventing tuberculosis. The treated children showed no inconvenience, and a sample of 2,028 of them revealed that 60 per cent reacted to tuberculin between the fourth and sixth week. From that time on, an increasingly large number reacted. —*From the Brazil correspondent to the Journal of the American Medical Association.*

Ceylon

Veterinarian on Study Tour Around the World.—Dr. Don W. Amarasinghe (ONT '48), formerly in charge of the Veterinary Research Laboratory, Peradenya, Ceylon, is returning to his country *via* the Far East after a two-year

Dr. Don W. Amarasinghe

study tour around the world. To date, he has visited India, Europe, Canada, and the United States.

During his stay in the United States, Dr. Amarasinghe held a post with the U. S. BAI in Chicago, from which he resigned recently. While in Chicago, he was guest speaker at several veterinary gatherings, including the Chicago meeting of the BAI veterinarians, and club members of the U. S. Department of Agriculture.

s/A. L. KASSIRER, *Ottawa, Ont.*

Denmark

Dr. Blom Speaks at Sterility Conference in U. S.—At the fifth annual conference of the American Society for the Study of Sterility in the Hotel Strand, Atlantic City, N. J., on June 6-7, Dr. Erik Blom, Veterinary Serum Laboratory, Copenhagen, spoke on "Interpretation of Spermatic Cytology."

s/FRED SIMONS, *Program Chairman.*

Norway

Veterinarian to Study in the U.S.—Dr. Rolf Svenkerud, head of the Veterinary Institute, Oslo, arrived in the United States on April 21, 1949, to begin a three-month study of American methods of preventing and treating virus diseases of swine and poultry.

Dr. Svenkerud will observe and study tech-

niques in schools, laboratories, and experimental stations in Illinois, Michigan, Minnesota, New Jersey, New York, Pennsylvania, and Wisconsin. He came to the United States under the Economic Coöperation Administration's program for providing technical assistance to countries participating in the European Recovery Program. He recently concluded a similar study in Great Britain.

The U.S. BAI is coöperating with ECA's Technical Assistance Division in arranging the studies. Details of Dr. Svenkerud's itinerary will be arranged after conferences with ECA and Department of Agriculture officials in Washington.

Dr. Svenkerud has served as head of the Oslo Veterinary Institute since 1947. He graduated from the Veterinary College for Norway in 1941 and was named assistant veterinarian at the institute in 1945.

Okinawa

American Goats.—The shipment of 2,750 goats to this island as a relief measure at the request of the army after the end of the war accomplished its purpose so well that the native population went wholeheartedly into the goat-breeding industry. Additional shipments requested and made in 1949 speak well for a stock-breeding industry that is hardly known to exist in the U.S.A., and also for the island's part in reconstructing war-torn Japan.—*Dairy Goat Journal, January*, 1949.

STATE BOARD EXAMINATIONS

Alabama.—The Alabama Veterinary Medical Examining Board will hold examinations on June 6-7, 1949, at Auburn, Ala. For further information, address Dr. I. S. McAdory, Alabama Polytechnic Institute, Auburn.

Florida.—The Florida Board of Veterinary Examiners will hold an examination on June 27-29, 1949, at the Everglades Hotel, Miami. Address inquiries to H. C. Nichols, Ocala.

Nebraska.—The Nebraska Board of Examiners in Veterinary Medicine and Surgery have scheduled an examination for June 21-22, 1949, at the State Capitol Building at Lincoln, commencing at 8:30 a.m. each day. Applications must be filed with the Bureau of Examining Boards at least 10 days prior to the date of the examination together with a recent photograph of the applicant, a 4x5-in. photostat of the veterinary degree, and the $20 examination fee. For further information and forms, address W. S. Petty, Department of Health, Lincoln 9, Neb.

Utah.—The Utah State Veterinary Examining Board will conduct an examination on Aug. 8-9, 1949, at the State Capitol Building, Salt Lake City. A $15 registration fee and a diploma from a recognized veterinary college must be submitted with the application. For further information and application forms, address Mrs. Rena B. Loomis, Department of Registration, State Capitol Building, Salt Lake City, Utah.

USPHS Examination.—An examination for regular Corps Veterinary Officers in the U. S. Public Health Service will be held Sept. 26-Oct. 7, 1949, at locations to be announced later.

VETERINARY MILITARY SERVICE

Officers Promoted.—Announcement is made of the temporary promotion of the following officers of the Veterinary Corps in the Army of the United States under the provisions of Section 515 of the Officer Personnel Act of 1947, with date of rank from April 6, 1949.

LIEUTENANT COLONEL TO COLONEL

Laurence R. Bower, who returns in June from a tour of duty in Panama and is assigned to the U.S. Military Academy, West Point, N.Y.

Harvie R. Ellis, U.S. Army Mission, Lima, Peru.

Arvo T. Thompson, army secretary, Committee on Biological Warfare and Committee on Chemical Warfare, Research and Development Board, National Military Establishment.

Elmer W. Young, now at Fort Benjamin Harrison, Ind., and under change of assignment orders to Headquarters, Quartermaster Corps Inspection Service with station in Chicago, Ill., effective in June.

MAJOR TO LIEUTENANT COLONEL

Donald C. Kelley, Chicago Quartermaster Depot, Chicago, Ill.

William M. Lukens, Mather Air Force Base, Calif.

Roy A. Resseguie, Chicago Quartermaster Depot, Chicago, Ill.

Marion W. Scothorn, Far East Command.

Mervyn B. Starnes, Quartermaster Food & Container Institute for the Armed Forces, Chicago, Ill.

Neil O. Wilson, now at McCormack General Hospital, and under change of assignment orders to Fort Benjamin Harrison, Ind., effective in June.

CAPTAIN TO MAJOR

Burton C. Christopher, Eastern Pennsylvania Military District, Philadelphia.

Lloyd C. Fry, Chicago Quartermaster Depot, Chicago, Ill.

Mulford C. Lockwood, Schenectady General Depot, Schenectady, N.Y.

Roy E. Kyner, Walker Air Force Base, N.M.

Lowell A. Osborn, now with the U.S. Army in Europe, and under change of assignment orders to Fort Lewis, Wash., effective in June.

Frederick A. Weil, Far East Command.

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Major Jones to Speak at Association of Medical Museums.—Major Thomas C. Jones, V.C., Army Institute of Pathology, Washington, D.C., will attend the International Association of Medical Museums at Harvard Medical School, Boston, Mass., April 14-16, 1949, where he will present a paper on "Morphology and Clinical Behavior of Canine Testicular Tumors." The paper was prepared by Major Jones and Dr. Nathan B. Friedman. An exhibit on the same subject will be used in connection with the talk.

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Veterinarian Assigned to Atomic Energy Commission.—Lieut. Col. John H. Rust (KSC '32), Tacoma Park, Md., is one of nine military

and public health officers assigned by the Atomic Energy Commission to training centers for study in biology and medicine. The assignment is for a six-month period, and Colonel Rust has been assigned to Duke University, Durham, N. Car.

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Veterinary Colleges Recognized by the Army.—Appointment to commissioned rank in the Veterinary Corps of the Regular Army or Veterinary Corps Reserve is limited to graduates in veterinary medicine from the following institutions:

Alabama Polytechnic Institute, Auburn.
Colorado A. & M. College, Ft. Collins.
Iowa State College, Ames.
Kansas State College, Manhattan.
Michigan State College, East Lansing.
Cornell University, Ithaca.
Ohio State University, Columbus.
University of Toronto, Guelph.
University of Pennsylvania, Philadelphia.
Texas A. & M. College, College Station.
State College of Washington, Pullman.

The Ontario Veterinary College, the University of Toronto's department of veterinary medicine, is the only college not located in the United States that is approved by The Surgeon General of the Army. The new veterinary colleges (Georgia, Illinois, California, Minnesota, Oklahoma) are still in the period of wholesome adolescence.

BIRTHS

Dr. (KSC '39) and Mrs. Charles D. Labahn, Fort Smith, Ark., announce the birth of their second son, James Davis on Oct. 9, 1948.

To Dr. (TEX '46) and Mrs. J. Ray Martin, Coleman, Texas, a son, James Charles, on Nov. 20, 1948.

To Dr. (KSC '39) and Mrs. Peter J. Germanio, Maple Shade, N. J., a daughter, Susan Jean, on Nov. 22, 1948.

Dr. (KSC '46) and Mrs. Orris Nipper, Magnolia, Ark., announce the birth of their first child, Stephan Lyndall on Jan. 10, 1949.

To Dr. (KSC '47) and Mrs. Otto F. Luke, Colville, Wash., a daughter, Betty, on March 9, 1949.

Wm. P. (CORN '44) and Ann Gott King (CORN '44), Westbrook, Maine, announce the birth of a son, Peter William, on March 25, 1949.

DEATHS

★**Frederick L. Briggs** (USCVS '21), 63, Attleboro, Mass., died May 5, 1949. Dr. Briggs, a member of the Massachusetts Veterinary Medical Association, was admitted to the AVMA in 1927.

★**Emerson J. Cary** (Mc G '94), 77, San Marino, Calif., died on April 9, 1949. Dr. Cary entered the U.S. Bureau of Animal Industry in 1900 where he remained for forty years—first as a field veterinary inspector in the Northwest, then as supervisory inspector at the Kansas City stockyards, and, later, as supervisory inspector at the St. Joseph, Mo., stockyards. He retired to San Marino in 1942. Dr. Cary was admitted to the AVMA in 1918.

★**Andre De Mott** (CORN '26), 56, De Ruyter, N. Y., died on Feb. 28, 1949. Dr. De Mott was a member of the New York Veterinary Medical Association and of the AVMA.

★**Clyde W. Denman** (KCVC '16), 56, Hot Springs, Ark., died of undulant fever on Jan. 26, 1949. Dr. Denman was a member of the Arkansas Veterinary Medical Association and was admitted to the AVMA in 1939.

Austin Folsom (CHI '16), Waukon, Iowa, died on Feb. 28, 1949.

John W. Haxby (CHI '92), 77, Clarinda, Iowa, died on April 27, 1949. Dr. Haxby had practiced in Clarinda for more than forty years and was a former president of the Iowa Veterinary Medical Association and assistant state veterinarian. He had been a member of the AVMA.

★**William M. Long** (CORN '16), 56, Baldwinsville, N. Y., died on Feb. 23, 1949. Dr. Long was admitted to the AVMA in 1923.

★**C. D. McGilvray** (MC K '01), 77, Toronto, died on April 18, 1949. See P. 446 for obituary. Dr. McGilvray joined the AVMA in 1906.

F. C. Randall (GA '25), 53, Lyons, Ga., died March 23, 1949, of a heart attack. Dr. Randall was a veteran of World War I and had practiced in Lyons for more than twenty years. He is survived by his wife, four sons, and two daughters. One son, Dr. F. C. Randall, Jr., is practicing in Glenville, Ga. Dr. Randall was a member of the Georgia Veterinary Medical Association.

Edgar M. Rogers (CHI '10), Loretta, Wis., died April 15, 1949. Dr. Rogers had been a member of the AVMA.

J. A. Thornborrow (CHI '94), Virginia, Ill., died May 3, 1947.

★**Charles H. Tilton** (AMER '96), Framingham, Mass., died on March 11, 1949. Dr. Tilton was a member of the Massachusetts Veterinary Association and was admitted to the AVMA in 1927.

★**S. H. Walkerdine** (IND '21), 62, Sacramento, Calif., died in February, 1949. Dr. Walkerdine was admitted to the AVMA in 1930.

★**Louis E. Willey** (ISC '11), 62, Sioux City, Iowa, died on April 13, 1949, of a cerebral hemorrhage. Dr. Willey was assistant professor of bacteriology at the University of Minnesota for three years; assistant professor of veterinary medicine at Iowa State College for five years; and, in 1920, joined the scientific staff of the Sioux City Serum Co., where he remained until his death. Dr. Willey was a member of the Iowa Veterinary Medical Association and was admitted to the AVMA in 1916.

Paul R. Yarbrough (API '38), Birmingham, Ala., died on April 14, 1949, of Waterhouse-Friderichsen syndrome. He had been ill only one day. Dr. Yarbrough had been with Tedder's Dog & Cat Hospital in Birmingham since 1946.

★Indicates members of the AVMA.

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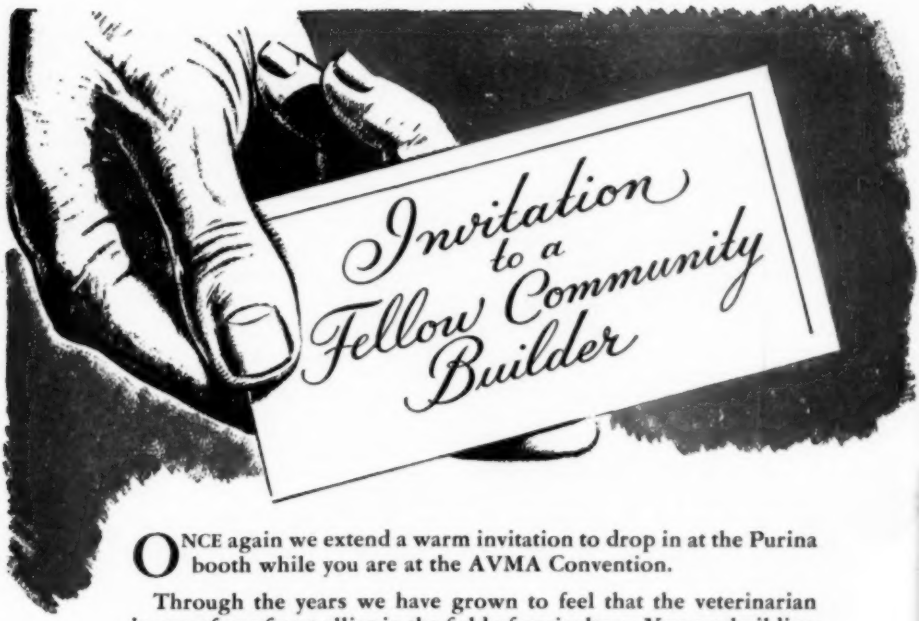

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COMING MEETINGS

Missouri Veterinary Medical Association. Annual meeting. Hotel Jefferson, St. Louis, Mo., June 6-7, 1949. J. L. Wells, Box 676, Kansas City, Mo., secretary.

Oklahoma State Veterinary Medical Association, summer meeting, and Conference for Veterinarians. School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, June 6-7, 1949. Lewis H. Moe, School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, Okla.

Alabama Polytechnic Institute. Annual conference for veterinarians. Alabama Polytechnic Institute, Auburn, Ala., June 7-9, 1949. Dr. J. E. Greene, Cary Hall, A.P.I., Auburn, Ala., chairman.

Texas Veterinary Conference, A. & M. College of Texas. Annual conference. School of Veterinary Medicine, College Station, June 9-10, 1949. R. D. Turk, A. & M. College of Texas, College Station, Texas, chairman.

Kansas State College. Annual conference for veterinarians. Veterinary buildings, Kansas State College, Manhattan, June 9-10, 1949. E. E. Leasure, dean.

Georgia State Veterinary Medical Association. Annual meeting. Atlanta Biltmore Hotel, Atlanta, Ga., June 13-14, 1949. Chas. C. Rife, 420 Edgewood Ave., N.E., Atlanta, Ga., secretary.

South Carolina Association of Veterinarians. Summer meeting. Jefferson Hotel, Columbia, S. Car., June 15-16, 1949. R. A. Mays, Columbia, S. Car., secretary.

Ohio State University, The. Annual conference for veterinarians. College of Veterinary Medicine, The Ohio State University, Columbus, June 15-17, 1949. R. E. Rebrassier, College of Veterinary Medicine, The Ohio State University, Columbus 10, Ohio, chairman.

Washington, State College of. Annual conference for veterinarians. College of Veterinary Medicine, State College of Washington, June 15-17, 1949. R. E. Nichols, dean.

Maryland State Veterinary Medical Association. Summer meeting. Hotel George Washington, Ocean City, Md., June 16-17, 1949. J. Walter Hastings, Sr., Cambridge, Md., secretary.

California State Veterinary Medical Association. Annual meeting. The Chase Hotel, Santa Monica, Calif., June 20-22, 1949. Mr. Chas. S. Travers, 16th and Mission Sts., San Fransicso 3, Calif., secretary.

Wisconsin Postgraduate Conference for Veterinarians. University of Wisconsin, Madison, Wis., June 21-23, 1949. W. R. Pritchard, Department of Veterinary Science, the University of Wisconsin, Madison, chairman, Conference Committee.

(*Continued on page 26*)

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Vermont State Veterinary Medical Association. Annual meeting. Lake Morey Inn, Fairlee, Vt., June 22-23, 1949. W. D. Bolton, Burlington, Vt., secretary.

Montana State Veterinary Medical Association. Annual meeting. Helena, Mont., June 22-24, 1949. E. A. Tunnicliff, Montana Agricultural Experiment Station, Bozeman, Mont., secretary.

New York State Veterinary Medical Society. Annual meeting. Pennsylvania Hotel, New York City, June 23-25, 1949. J. S. Halat, 1231 Gray Ave., Utica, N. Y., secretary.

Alberta Veterinary Medical Association. Annual meeting. Calgary, Alta., June 24-25, 1949. J. C. Wainright, Calgary, Alta., secretary.

North Carolina Veterinary Medical Association. Annual meeting. Carolina Beach, N. Car., June 28-29, 1949. J. H. Brown, Tarboro, N. Car., secretary.

Northwest Veterinary Medical Association (Oregon, Washington, and British Columbia). Annual meeting. Empress Hotel, Victoria, British Columbia, on June 28-30, 1949. F. W. B. Smith, 602 Credit Foncier Bldg., Vancouver, B. C.

American Veterinary Medical Association. Annual convention. Book-Cadillac and Statler Hotels, Detroit, Mich., July 11-14, 1949. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Maine Veterinary Medical Association. Quarterly meeting. Portland, Maine, July 13, 1949. S. W. Stiles, Falmouth Foreside, Maine, secretary.

Kentucky Veterinary Medical Association. Summer meeting. Seelbach Hotel, Louisville, Ky., Aug. 17-18, 1949. Ross Brown, University of Kentucky, Lexington, Ky., secretary.

Colorado State Veterinary Medical Association. Annual meeting. Shirley Savoy Hotel, Denver, Colo., Sept. 29-30, 1949. W. P. Blake, 2410 8th Ave., Greeley, Colo., secretary.

Pennsylvania State Veterinary Medical Association. Annual meeting. Bedford Springs Hotel, Bedford Springs, Pa., Oct. 5-7, 1949. Raymond C. Snyder, Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Chief Livestock Sanitary Officials. National Assembly. The Neil House, Columbus, Ohio, Oct. 10-11, 1949. Dr. C. F. Clark, State Office Building, Lansing 13, Mich., secretary.

United States Livestock Sanitary Association. Annual meeting. The Neil House, Columbus, Ohio, Oct. 12-14, 1949. Dr. R. A. Hendershott, 1 West State St., Trenton 8, N. J., secretary.

Iowa, Eastern Veterinary Medical Society. Annual meeting. Hotel Montrose, Cedar Rapids, Oct. 20-21, 1949. Laurance P. Scott, P. O. Box 325, Waterloo, Iowa, secretary.

Florida State Veterinary Medical Association. Annual meeting. Hotel George Washington, Jacksonville, Fla., Oct. 23-25, 1949. V. L. Bruns, Box 623, Williston, Fla., secretary.

American Public Health Association. Annual meeting. Hotels Statler and New Yorker, New York City, Oct. 24-28, 1949. Dr. Reginald

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(Continued from page 26)

Atwater, American Public Health Association, 1790 Broadway, New York, N. Y., executive secretary.

Mississippi Valley Veterinary Medical Association. Annual fall meeting. Pere Marquette Hotel, Peoria, Ill., Nov. 2-3, 1949. R. J. Kirkpatrick, 1235 N. Henderson St., Galesburg, Ill., secretary.

Southern Veterinary Medical Association. Annual meeting. Thomas Jefferson Hotel, Birmingham, Ala., Nov. 7-9, 1949. A. A. Husman, 320 Agricultural Bldg., Raleigh, N. Car., secretary.

Nebraska State Veterinary Medical Association. Annual meeting. Cornhusker Hotel, Lincoln, Neb., Dec. 7-9, 1949. L. V. Skidmore, College of Agriculture, Lincoln 1, Neb., secretary.

Tri-State (Arkansas, Mississippi, Tennessee) Veterinary Conference. Peabody Hotel, Memphis, Tenn., Jan. 16-17, 1950. H. W. Nance, Lawrenceburg, Tenn., secretary.

• • •

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. George E. Martin, 530 Stockton Ave., San José, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Greater St. Louis Veterinary Medical Association. Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Tex., secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, the third Tuesday of each month. J. J. Arnold, Box 144, New Castle, Ind.

Jefferson County Veterinary Society, Louisville, Ky., the first Wednesday evening of each month. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial

(Continued on page 30)

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1. Stults, A. W., and Foley, E. J.: J. Am. Vet. M. A. 113: 68 (July) 1948.

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(Continued from page 28)

Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

Michiana Veterinary Medical Association, Hotel Elkhart, Elkhart, Ind., 7:00 p.m., the second Thursday of each month. R. W. Worley, 3224 Lincoln Way West, South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. I. N. Bohlender, Box 588, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Redwood Empire Veterinary Medical Association, the second Tuesday of every other month. Charles D. Stafford, Novato, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the third Tuesday of each month. Mitchell Smith, 3740 Rosecrans Boulevard, San Diego, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. D. H. McDole, 8674 Melrose Ave., Los Angeles 46, secretary.

• • •

Foreign Congresses

Seventh Pacific Science Congress. New Zealand, Feb. 2-22, 1949. Mr. Harold J. Coolidge, 2101 Constitution Ave., Washington 25, D. C., executive secretary.

Fifth International Congress of Comparative Pathology. Istanbul, Turkey, May 17-20, 1949. Dr. Louis Grollet, 7 rue Gustave Naduad, Paris 16 e, France, general secretary of permanent committee.

National Veterinary Medical Association of Great Britain and Ireland. London, England, Aug. 12-15, 1949. F. Knight, General secretary, 36, Gordon Square, London, W.C.1.

(Continued on page 36)

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Veterinarian, recently arrived from Europe, wishes a position as assistant to or helper with a licensed veterinarian or in an animal hospital. Has twenty years' experience. Address replies to Dr. Leopoldas Buividas, 3518 Glenwood Road, Brooklyn 10, N. Y. Telephone Gedney 4-9385.

Veterinarian prefers small animal practice. Experienced, married, graduate of recognized school, good references. Details on request. Address "Box H 9," c/o Journal of the AVMA.

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Graduate, experienced veterinarian wants to lease or buy active small animal or mixed practice in any state. Would prefer practice in Pennsylvania, New Jersey, Maryland, or Delaware. Give full details. Can settle suitable practice at

(*Continued on page* 34)

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(Continued from page 32)

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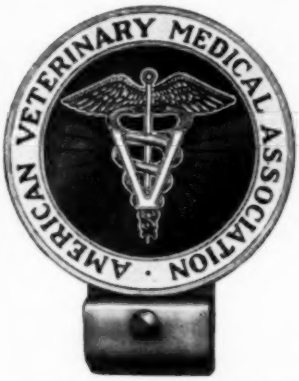
(Continued on page 40)



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(Continued from page 30)

Fourteenth International Veterinary Congress. London, England, Aug. 8-13, 1949.
General Secretary, Permanent Committee: Prof. L. de Blieck, Kwartellaan 51. The Hague, Netherlands.
General Secretary, Organizing Committee: Mr. W. G. R. Oates, 9 Red Lion Square, London, W. C. 1, England.
Secretary, United States Committee: J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill. (Applications for membership from veterinarians in the United States may be obtained by writing to Dr. Hardenbergh.)

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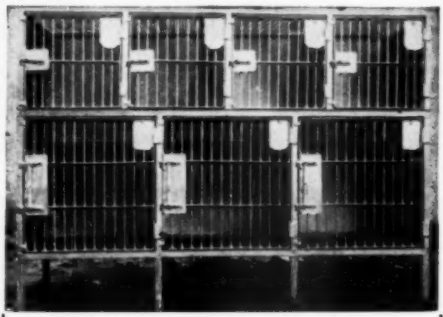

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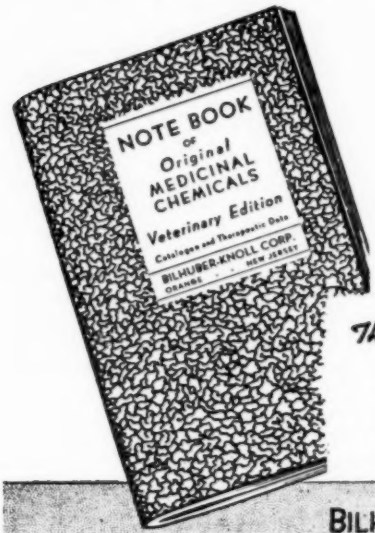

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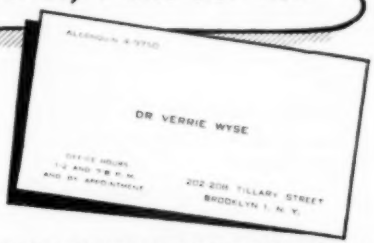

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(*Continued from page 34*)

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Their "shock absorber" quality helps prevent breakage when knots are tied; acts as insurance against knot slippage. Silk sutures reduce tissue strangulation during post-operative edema. Silk adjusts itself as tissues swell and shrink.

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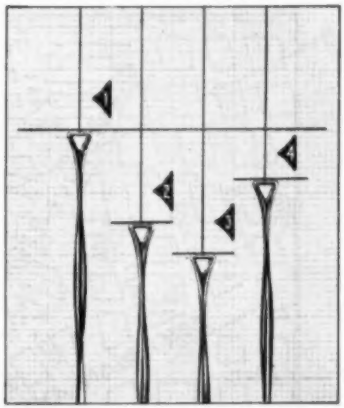

(Fig. 1) An 0 gauge Champion-Paré Serum-Proof Silk Suture prior to stress. (Fig. 2) The same, suspending a 5 lb. weight. (Fig. 3) The same suture, suspending a 10 lb. weight. (Fig. 4) After weights are removed.

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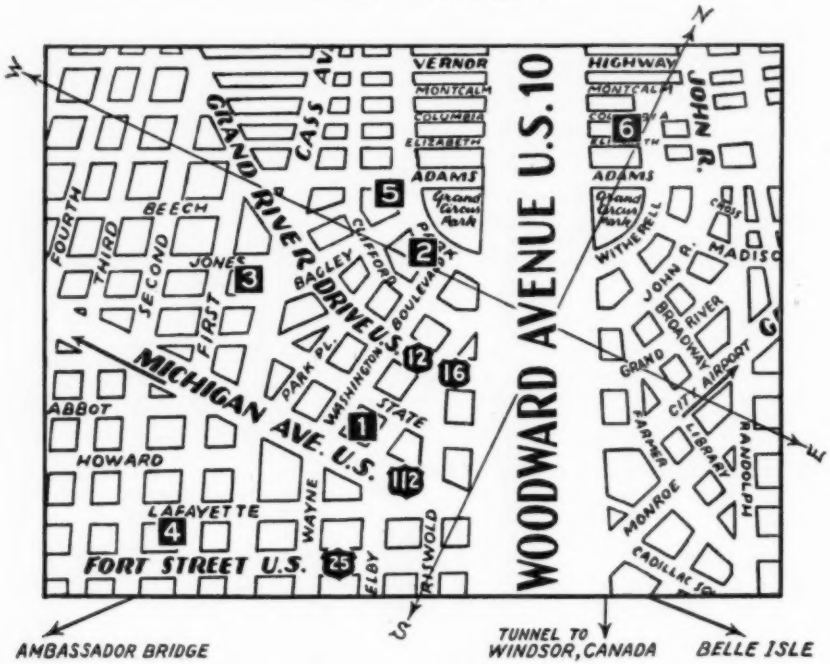

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HOTEL RESERVATIONS — DETROIT SESSION

Eighty-Sixth Annual Meeting, American Veterinary Medical Association

July 11-14, 1949

All requests for rooms will be handled directly by the various hotels. An ample number of rooms of all types has been assured but the deadline for reservations against the number allotted for the AVMA Convention is 30 days prior to the dates of the meeting. Therefore, your request for accommodations should be sent in before June 10, 1949.

Be sure to indicate your first, second, and third choice hotel. *Date and time of arrival must be given, also date of expected departure.*

Address your request to the hotel of first choice; if this hotel cannot accommodate you, it will be referred to the Detroit Convention and Tourist Bureau which will then pass it on to the hotel of your next choice. You will receive a confirmation of your reservation directly from the hotel.

The Book Cadillac and Statler Hotels will serve as Joint Headquarters and each has allotted a good number of rooms for the AVMA Convention. However, these two hotels will not be able to meet all requests and, therefore, four other near-by hotels have been listed, giving a good range of accommodations and rates. All are first-class, and the locations of them are shown on the map on the opposite page.

The number of single rooms is limited and double occupancy is urged for as many as possible.

Schedule of Hotel Rates—See Locations on Opposite Page

Hotel	Single	Double Bed	Twin Beds	Suites
Book-Cadillac (Headquarters Hotel) 1114 Washington Blvd.	$3.50 up	$7.00 up	$7.00 up	$15.00-$32.00
Statler (Headquarters Hotel) 1539 Washington Blvd.	$3.50 up	$6.50 up	$7.50 up	$13.50-$25.00
Detroit Leland 1701 Cass St.	$3.75 up	$6.25 up	$7.00 up	*
Fort Shelby 525 W. Lafayette St.	$3.50 up	$6.00 up	$6.50 up	*
Tuller 521 Park Ave.	$2.75 up	$5.00 up	$6.00 up	*
Wolverine 50 E. Elizabeth St.	$2.75 up	$5.00 up	$7.00 up	*

*Inquire direct to hotel for rate and availability of suites.

---------- Cut Off Here ----------

HOTEL RESERVATION FORM—AVMA CONVENTION

(Please type or print)

To: Hotel (name)..... Date .....

Address .....

Detroit, Mich.

Please make reservations noted below:

First choice Hotel.....

Second choice Hotel.....

Third choice Hotel.....

Accommodations and Rate Desired

Single Room .....Rate.....

Double Room .....Rate.....

Twin Bed Room.....Rate.....

Parlor Suite .....Rate.....

Two Bedroom Suite.....Rate.....

Other (specify) .....Rate.....

Arriving on (date).....at .....a.m.....p.m.

Leaving on (date).....at .....a.m.....p.m.

Room will be occupied by:

Name .....Address .....

Name .....Address .....

Name .....Address .....

Name .....Address .....

I understand that, if the hotel of first choice to which this request is addressed cannot furnish the accommodations desired, it will be referred promptly to the Detroit Convention Bureau for attention.

Signed .....

Street Address .....

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Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals.

Manuscripts.—Manuscripts must be typewritten, double-spaced, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies **also** should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations. — Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple. Complex tables are not conducive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

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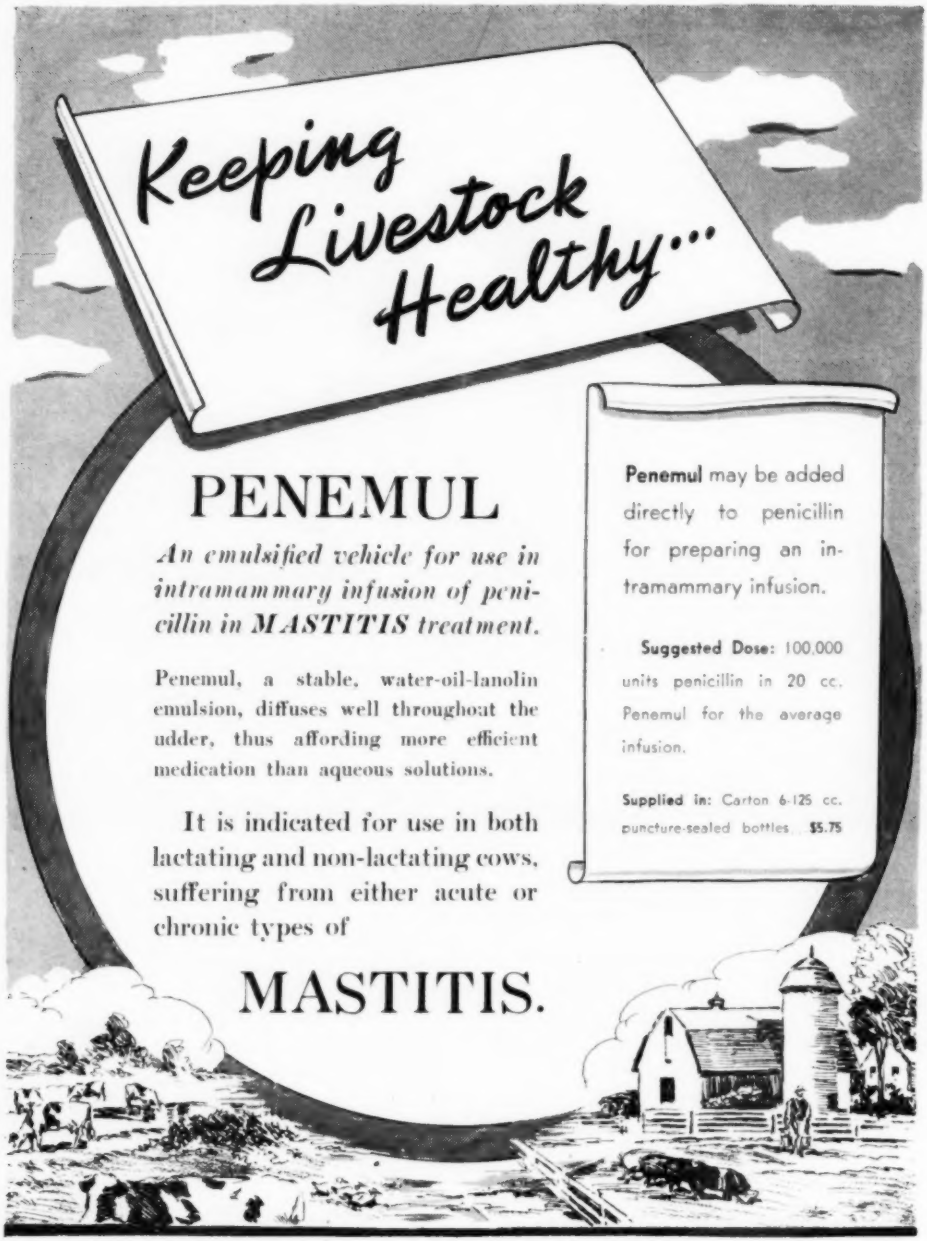
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